CCD-TR311/TR311E/TR411E/TR412E/TR511E/ TR512E/TR640E/TR730E/TR840E/TR845E

RMT-708/717

SERVICE MANUAL

Self Diagnostics
Supported model

AEP Model
CCD-TR411E/TR412E/TR511E/TR640E/TR840E/ TR845E

UK Model
CCD-TR411E/TR511E/TR640E/TR840E

East European Model
North European Model
Russian Model
CCD-TR411E/TR412E/TR511E/TR640E/TR840E

E Model
CCD-TR311/TR311E/TR511E/TR512E/TR730E

Hong Kong Model
CCD-TR311E/TR511E

Australian Model
CCD-TR311E/TR511E/TR512E/TR840E

Tourist Model
CCD-TR311/TR311E

Chinese Model
CCD-TR311E/TR511E/TR512E

Photo : CCD-TR840E
: RMT-708

Handycam
Video 8 XR
video Hi8 XR

B MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8mm Video MECHANICAL ADJUSTMENT MANUAL VII" (9-973-801-11).

SPECIFICATIONS

Video camera recorder

System

Video recording system
2 Rotary heads
Helical scanning FM system

Audio recording system
Rotary heads, FM system

Video signal
CCD-TR311 : NTSC color, EIA standards
CCD-TR311E/TR411E/TR511E/TR512E/TR640E/TR730E/TR840E/TR845E : PAL color, EIA standerds

Usable cassette
8mm video format cassette
CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E : standard 8
CCD-TR840E/TR845E : Hi8 or standard 8

Recording / Playback time (using 90 min. cassette)
SP mode: 1 hour and 30 minutes
LP mode: 3 hours

Fastforward/rewind time (using 90 min. cassette)
Approx. 5 min.

Image device
CCD (Charge Coupled Device)

Viewfinder
Electronic viewfinder
CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR640E/TR840E/TR845E : Monochrome
CCD-TR512E/TR730E : Color 113,578 (521 x 218)

Lens
Combined power zoom lens
Filter diameter 1 7/16 in. (37 mm)
CCD-TR411E (AEP, UK) : 16 x (Optical), 32 x (Digital)
CCD-TR412E (AEP) : 16 x (Optical), 64 x (Digital)
CCD-TR311/TR311E : 16 x (Optical), 100 x (Digital)
CCD-TR411E (EE, NE, RU) : 16 x (Optical), 160 x (Digital)
CCD-TR412E (EE, NE, RU) : 16 x (Optical), 200 x (Digital)
CCD-TR511E (AEP, UK)/TR640E (AEP, UK)/TR840E (AEP, UK)/TR845E : 18 x (Optical), 72 x (Digital)
CCD-TR511E (EE, NE, RU, E, HK, AUS, CN)/TR512E/TR640E (EE, NE, RU)/TR730E/TR840E (EE, NE, RU, AUS) : 18 x (Optical), 220 x (Digital)

Focal distance
CCD-TR311/TR311E/TR411E/TR412E : 3/16 - 2 5/8 in. (4.1 - 65.6 mm)
CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E : 3/16 - 8 in. (4.1 - 73.8 mm)
When converted to a 35 mm still camera
CCD-TR311/TR311E/TR411E/TR412E : 1 9/16 - 24 7/8 in. (39.4 - 630 mm)
CCD-TR511E/TR512E : 1 9/16 - 28 in. (39.4 - 709 mm)
CCD-TR640E/TR730E/TR840E/TR845E : 1 7/8 - 33 1/2 in. (47.2 - 850 mm)

Color temperature
Auto

Minimum illumination*
CCD-TR311/TR311E/TR411E/TR412E : 0.4 lux at F1.4 (Visible minimum low light 0.2 lux)
CCD-TR511E/TR512E : 0.4 lux at F 1.4
CCD-TR640E/TR730E/TR840E/TR845E : 0.7 lux at F 1.4
CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E : 0 lux (in NightShot mode)**

* Minimum illumination expresses the light level a camcorder requines to produce a picture. Visible minimum low light expresses the light level to produce a visible signal.
**Object invisible for the dark can be shot with infrared lighting.

Illumination range
CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E : 0.4 lux to 100,000 lux
CCD-TR640E/TR730E/TR840E/TR845E : 0.7 lux to 100,000 lux

Recommended illumination
More than 100 lux

Input and output connectors

S video input/output (CCD-TR840E/TR845E only)
4-pin mini DIN
Luminance signal : 1 Vp-p, 75 ohms, unbalanced
CCD-TR311 :
Chrominance signal : 0.286 Vp-p, 75 ohms, unbalanced
CCD-TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E/TR840E/TR845E :
Chrominance signal : 0.3 Vp-p, 75 ohms, unbalanced

Video input (CCD-TR840E : AUS only)/output
Phono jack : 1 Vp-p, 75 ohms, unbalanced

— Continued on next page —

8 VIDEO CAMERA RECORDER

CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E

Hi8 VIDEO CAMERA RECORDER

CCD-TR840E/TR845E

MICROFILM

SONY®

Audio input (CCD-TR840E : AUS only)/output
CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E : Monaural, Phone jack, 327 mV
CCD-TR730E/TR840E/TR845E : Phono jacks (2: stereo L and R) 327 mV, (at output impedance 47 kilohms) impedance less than 2.2 kilohms
RFU DC OUT
Special minijack, DC 5V
Headphone jack(CCD-TR730E/TR840E/TR845E only)
Stereo minijack (ø 3.5 mm)
LANC control jack
Stereo mini-minijack (ø 2.5 mm)
MIC jack
Minijack, 0.388mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kilohms (ø 3.5 mm)
CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E : Monaural type
CCD-TR730E/TR840E/TR845E : Stereo type
Intelligent accessory shoe (CCD-TR730E/TR840E/TR845E only)
8-pin connector

General

Power requirements
7.2 V (battery pack)
8.4 V (AC power adaptor)

Average power consumption (when using the battery pack)
During camera recording
CCD-TR311E/TR311E/TR411E/TR412E/TR511E/TR512E : 2.5 W
CCD-TR640E : 2.6 W
CCD-TR730E/TR840E/TR845E : 2.7 W
Operating temperature
32°F to 104°F(0°C to 40°C)
Storage temperature
-4°F to +140°F(-20°C to +60°C)
Dimensions (Approx.)
CCD-TR512E/TR370E : 4 1/4 x 4 1/4 x 7 5/8 in. (107 x 107 x 193 mm)(w/h/d)
CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR640E/TR840E/TR845E : 4 1/4 x 4 1/4 x 8 1/4 in. (107 x 107 x 209 mm)(w/h/d)
Mass (Approx.)
CCD-TR311/TR311E/TR411E/TR412E/TR511E (EE, NE, RU, E, HK, AUS, CN) : 1 lb 11 oz (790 g)
CCD-TR511E (AEP, UK)/TR512E/TR640E/TR730E/TR840E/TR845E : 1 lb 12 oz (800 g)
excluding the battery pack, lithium battery, cassette and shoulder strap
CCD-TR311/TR311E/TR411E/TR412E/TR511E (EE, NE, RU, E, HK, AUS, CN) : 2 lb (930 g)
CCD-TR511E (AEP, UK)/TR512E/TR640E/TR730E/TR840E/TR845E : 2 lb 1 oz (940 g)
including the battery pack NP-F330, lithium battery CR2025, cassette and shoulder strap
Microphone
CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E : Monaural type
CCD-TR730E/TR840E/TR845E : Stereo type
Supplied accessories
See page 4.

AC power adaptor

Power requirements
100 -240 V AC, 50/60 Hz
Power consumption
23 W
Output voltage
DC OUT: 8.4 V, 1.5 A in operating mode
Operating temperature
32°F to 104°F(0°C to 40°C)
Storage temperature
-4°F to +140°F(-20°C to +60°C)
Dimensions (Approx.)
5 x 1 9/16 x 2 1/2 in. (125 x 39 x 62 mm)(w/h/d) excluding projecting parts
Mass (Approx.)
9.8 oz (280 g) excluding power cord

Design and specifications are subject to change without notice.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit board Repairing
    - Keep the temperature of the soldering iron around 270°C during repairing.
    - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
    - Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

Table for difference of function

Model		CCD-TR311	CCD-TR311E	CCD-TR411E	CCD-TR412E	CCD-TR511E	CCD-TR511E	Remark
Destination		E, JE	E, AUS, HK, CN, JE	AEP, UK, EE, NE, RU	AEP, EE, NE, RU	AEP, UK, EE, NE, RU	E, HK, AUS, CN	
Color System		NTSC	PAL	PAL	PAL	PAL	PAL	
Classification		TYPE E	TYPE D	TYPE D	TYPE D	TYPE D	TYPE D	
Remote Commander		×	×	×	RMT-708	RMT-708	RMT-708	
Hi8		×	×	×	×	×	×	
Standard 8		○	○	○	○	○	○	
Lens	Optical	16X	16X	16X	16X	18X	18X	16X : LSV601A, 18X : LSV600A
	Digital	100X	100X	32X(Note1)	64X(Note2)	72X(Note3)	220X	
CCD		510H	510H	510H	510H	510H	510H	
Night shot		×	×	×	×	○	○	○ : LSV600A
Steady shot		×	×	×	×	×	×	
Photo mode		×	×	×	×	×	×	
Digital effect		×	×	×	×	×	×	
Audio system		Mono	Mono	Mono	Mono	Mono	Mono	
TBC&DNR		×	×	×	×	×	×	
Time code		×	×	×	×	×	×	
VTR REC		×	×	×	×	×	×	
Color EVF		×	×	×	×	×	×	
B/W EVF		○	○	○	○	○	○	○ : with VF-99 board
Intelligent acssessory shoe		×	×	×	×	×	×	
Normal acssessory shoe		×	×	×	×	○	○	
LCD indicator backlight		×	×	×	×	×	×	
Manual focus		×	×	×	×	○	○	○ : with MF-8500 block

Model		CCD-TR512E	CCD-TR640E	CCD-TR730E	CCD-TR840E	CCD-TR840E	CCD-TR845E	Remark
Destination		E, AUS, CN	AEP, UK, EE, NE, RU	E	AEP, UK, EE, NE, RU	AUS	AEP	
Color System		PAL	PAL	PAL	PAL	PAL	PAL	
Classification		TYPE A	TYPE C	TYPE G	TYPE B	TYPE F	TYPE H	
Remote Commander		RMT-708	RMT-708	RMT-708	RMT-708	RMT-708	RMT-717	
Hi8		×	×	×	○	○	○	○ : with S VIDEO terminal
Standard 8		○	○	○	×	×	×	
Lens	Optical	18X	18X	18X	18X	18X	18X	16X : LSV601A, 18X : LSV600A
	Digital	220X	72X(Note3)	220X	72X(Note3)	220X	72X	
CCD		510H	760H	760H	760H	760H	760H	
Night shot		○	○	○	○	○	○	○ : LSV600A
Steady shot		×	○	○	○	○	○	○ : with SE-65 board SE451, 452, IC451
Photo mode		×	×	○	×	×	×	○ : with VC-195 board IC204 is CXD3131
Digital effect		×	×	○	×	×	×	○ : with VC-195 board IC204 is CXD3131
Audio system		Mono	Mono	Stereo	Stereo	Stereo	Stereo	
TBC&DNR		×	×	○	○	○	○	○ : with VC-195 board IC204
Time code		×	×	×	×	×	○	○ : with VC-195 board IC701
VTR REC		×	×	×	×	○	×	○ : with FK-8500 block S005, 007
Color EVF		○	×	○	×	×	×	○ : with VF-119, 120 board, LB-54 board
B/W EVF		×	○	×	○	○	○	○ : with VF-99 board
Intelligent acssessory shoe		×	×	○	○	○	○	○ : with VC-195 board CN909
Normal acssessory shoe		○	○	×	×	×	×	
LCD indicator backlight		×	×	×	○	○	○	○ : with CF-49 board Q003, 005
Manual focus		○	○	○	○	○	○	○ : with MF-8500 block

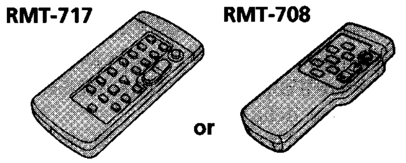
Note1 : EE,NE,RU model is 160X
Note2 : EE,NE,RU model is 200X
Note3 : EE,NE,RU model is 220X

- Abbreviation

EE	:	East European Model
NE	:	North European Model
RU	:	Russian Model
HK	:	Hong Kong Model
AUS	:	Australian Model
JE	:	Tourist Model
CN	:	Chinese Model

Supplied accessories

1



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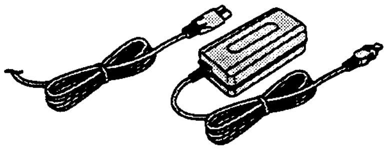

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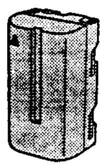

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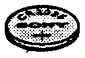

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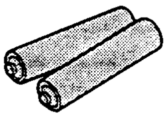

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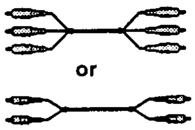

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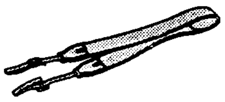

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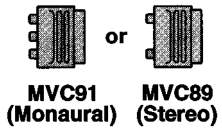

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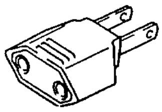


1 **Wireless Remote Commander (1)**
RMT-708 : Except CCD-TR311/TR311E/TR411E/TR845E
RMT-717 : CCD-TR845E

2 **AC-L10A/L10B/L10C AC power adaptor**

3 **NP-F330 Battery pack (1)**

4 **CR2025 Lithium Battery (1)**
The lithium battery is already installed in your camcorder.

5 **Size AA (R6) battery for Remote Commander (2)**

6 **A / V connecting cable (1)**
Stereo : CCD-TR730E/TR840E/TR845E
Monaural : Except CCD-TR730E/TR840E/TR845E

7 **Shoulder strap (1)**

8 **21 pin adaptor (1)**
CCD-TR411E/TR412E/TR511E/TR640E/TR840E/TR845E

9 **2 pin conversion adaptor (1)**
CCD-TR311/TR311E : E, HK, JE/TR511E : E, HK/TR512E : E/TR730E : E

- Abbreviation
  HK : Hong Kong Model
  JE : Tourist Model

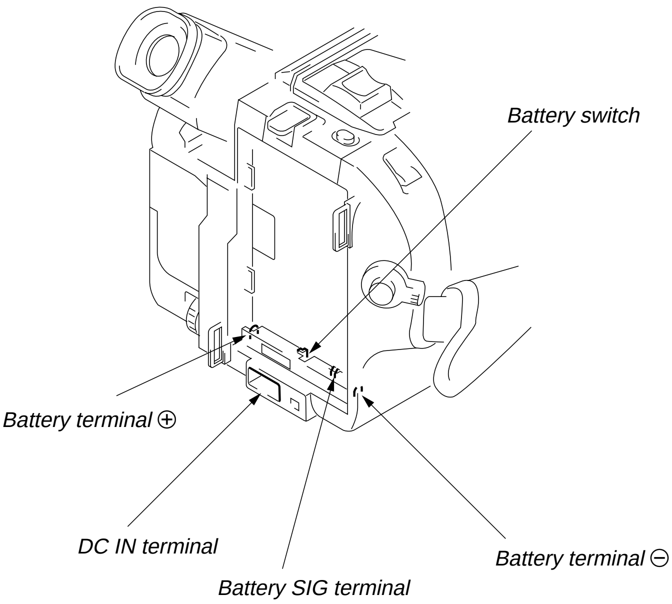
SERVICE NOTE

1. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied (8.4V) to the battery terminal using the service power cord (J-6082-223-A), the power is shut off so that the unit cannot operate.
This following two methods are available to prevent this. Take note of which to use during repairs.

Method 1.
Connect the servicing remote commander RM-95 (J-6082-053-B) to the LANC jack, and set the remote commander switch to the “ADJ” side.

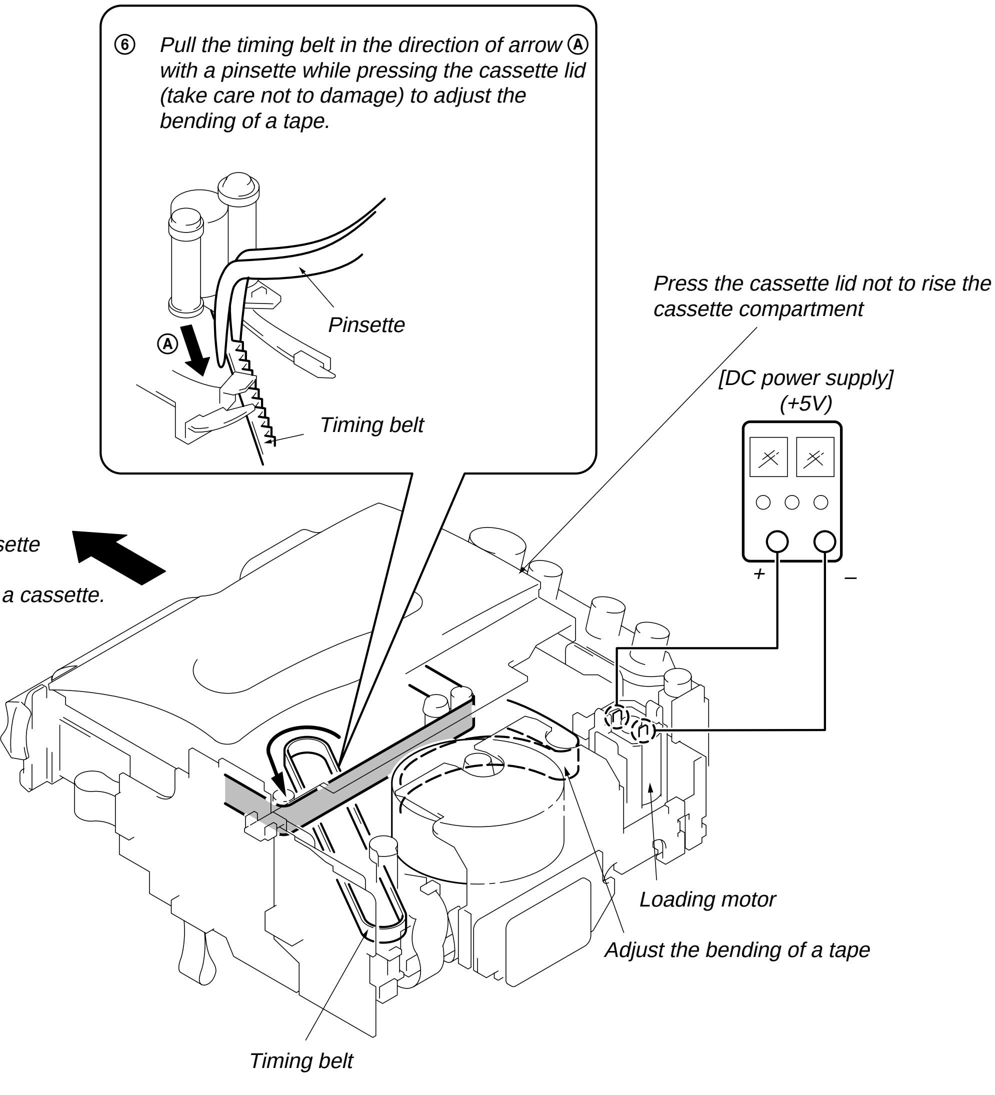
Method 2.
Use the DC IN terminal. (Use the AC power adaptor.)



Battery switch
Battery terminal ⊕
DC IN terminal
Battery SIG terminal
Battery terminal ⊖

2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

① Refer to 2-1. to remove the front panel block.
② Refer to 2-2. to remove the cabinet (R) block.
③ Refer to 2-7. to remove the battery panel block.
④ Refer to 2-9. to remove the cabinet (L) block.
⑤ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette lid.



⑥ Pull the timing belt in the direction of arrow Ⓐ with a pinsette while pressing the cassette lid (take care not to damage) to adjust the bending of a tape.

⑦ Let go your hold the cassette lid and rise the cassette compartment to take out a cassette.

Ⓐ
Pinsette
Timing belt
Press the cassette lid not to rise the cassette compartment
[DC power supply] (+5V)
+
–
Loading motor
Adjust the bending of a tape
Timing belt

SELF-DIAGNOSIS FUNCTION

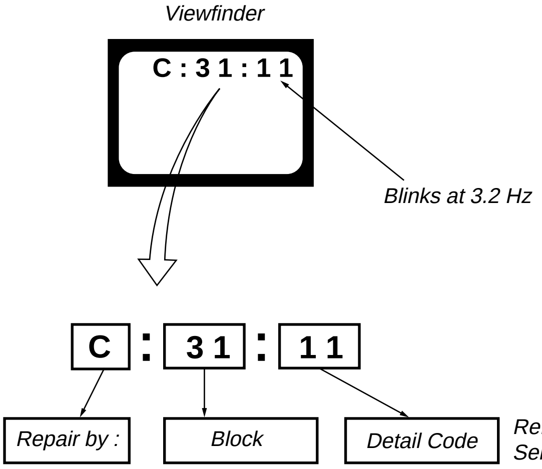
1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder what to do. This function consists of two display; self-diagnosis display and service mode display.

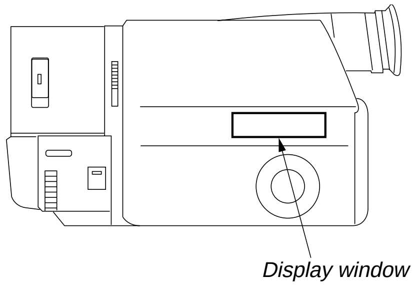
Details of the self-diagnosis functions are provided in the Instruction manual.

2. Self-diagnosis display

When problems occur while the unit is operating, the counter of the viewfinder shows a 4-digit display consisting of an alphabet and numbers, which blinks at 3.2 Hz. This 5-character display indicates the “repaired by:”, “block” in which the problem occurred, and “detailed code” of the problem.



Refer to page7
Self-Diagnosis Code table



C : Corrected by customer
H : Corrected by dealer
E : Corrected by service engineer

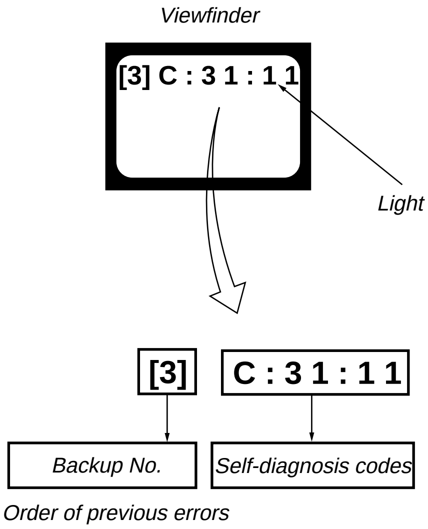
Indicates the appropriate step to be taken
E. g.
31 ... Reload the tape.
32 ... Turn on power again.

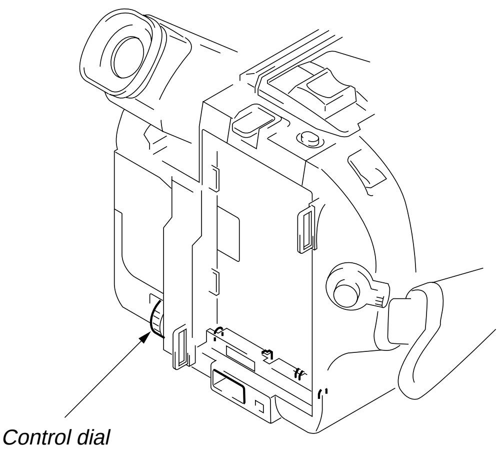
3. Service Mode Display

The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the “STOP” key, set the switch from OFF to “VTR or PLAYER”, and continue pressing the “STOP” key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.





3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

[1] : Occurred first time
[2] : Occurred second time
[3] : Occurred third time
[4] : Occurred fourth time
[5] : Occurred fifth time
[6] : Occurred the last time

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The self-diagnosis display data will be backed up by the coin-type lithium battery. When this coin-type lithium battery is disconnected, the self-diagnosis data will be lost by initialization.

4. Self-diagnosis Code Table

Self-diagnosis Code			Symptom/State	Correction
Repaired by:	Block Function	Detailed Code		
C	21	00	Condensation.	Remove the cassette, and insert it again after one hour.
C	22	00	Video head is dirty.	Clean with the optional cleaning cassette.
C	23	00	Non-standard battery is used.	Use the InfoLITHIUM battery.
C	31	10	LOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	31	11	UNLOAD direction. Loading does not complete within specified time	Load the tape again, and perform operations from the beginning.
C	31	20	T reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	31	21	S reel side tape slacking when unloading.	Load the tape again, and perform operations from the beginning.
C	31	22	T reel fault	Load the tape again, and perform operations from the beginning.
C	31	23	S reel fault	Load the tape again, and perform operations from the beginning.
C	31	30	FG fault when starting capstan	Load the tape again, and perform operations from the beginning.
C	31	31	FG fault during normal capstan operations	Load the tape again, and perform operations from the beginning.
C	31	40	FG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	31	41	PG fault when starting drum	Load the tape again, and perform operations from the beginning.
C	31	42	FG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	31	43	PG fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	31	44	Phase fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	32	10	LOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	11	UNLOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	20	T reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	21	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	22	T reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	23	S reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	30	FG fault when starting capstan	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	31	FG fault during normal capstan operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	40	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	41	PG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	42	FG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	43	PG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	32	44	Phase fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning.
E	61	00	Difficult to adjust focus (Cannot initialize focus.)	Inspect the lens block focus reset sensor (Pin ⑲ of CN551 of VC-195 board) when focusing is performed when the focus dial is rotated in the focus manual mode and the focus motor drive circuit (IC552 of VC-195 board) when the focusing is not performed. Note : Use the remote commander RM-95 only for the model without the focus dial.
E	61	10	Zoom operations fault (Cannot initialize zoom lens.)	Inspect the lens block zoom reset sensor (Pin ㉑ of CN551 of VC-195 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC552 of VC195 board) when zooming is not performed.
E	62	00	Handshake correction function does not work well.(With pitch angular velocity sensor output stopped)	Inspect pitch angular velocity sensor (SE451 of SE-65 board) peripheral circuits.
E	62	01	Handshake correction function does not work well.(With yaw angular velocity sensor output stopped)	Inspect yaw angular velocity sensor (SE452 of SE-65 board) peripheral circuits.

TABLE OF CONTENTS

SERVICE NOTE

1. Power Supply During Repairs 5
2. To Take out a Cassette when not Eject (Force Eject) 5

Self-Diagnosis Function

1. Self-diagnosis function 6
2. Self-diagnosis Display 6
3. Service Mode Display 6
   - 3-1. Display Method 6
   - 3-2. Switching of Backup No. 6
   - 3-3. End of Display 6
4. Self-diagnosis Code Table 7

1. GENERAL

Using this manual 1-1
Checking supplied accessories 1-1
Installing and Charging the battery pack 1-1
Inserting a cassette 1-3
Camera recording 1-3
Hints for better Shooting 1-4
Checking the recorded picture 1-5
Connections for playback 1-5
Playing back a tape 1-6
Using alternative power sources 1-7
Changing the mode settings 1-8
Shooting with backlighting 1-9
Using the FADER function 1-10
Shooting in the dark (NightShot) 1-10
Using the wide mode function 1-11
Using the PROGRAM AE function 1-11
Focusing manually 1-12
Enjoying picture effect 1-12
Adjusting the exposure 1-13
Superimposing a title 1-13
Making your own titles 1-14
Recording with the date/time 1-14
Optimizing the recording condition 1-15
Releasing the STEADY SHOT function 1-15
Searching the boundaries of recorded date 1-15
Returning to a pre-registered position 1-16
Locating the marking position 1-16
Writing the RC time code on a recorded tape 1-17
Editing onto another tape 1-18
Charging the lithium battery in the camcoder 1-18
Resetting the date and time 1-18
Simple setting of clock by time difference 1-19
Usable cassettes and playback modes 1-19
Tips for using the battery pack 1-20
Maintenance information and precautions 1-21
Using your camcorder abroad 1-22
Self-diagnosis display 1-22
Identifying the parts 1-23
Warning Indicators 1-25

2. DISASSEMBLY

2-1. Removal of Front Panel Block 2-1
2-2. Removal of Cabinet (R) Block 2-2
2-3. Removal of EVF Block-1 2-2
2-4. Removal of TR Cover, CF-49 Board and LCD Block 2-2
2-5. Removal of EVF Block-2
(LB-54, VF-119 and VF-120 Boards) 2-3
2-6. Removal of EVF Block-3 (VF-99 Board) 2-3
2-7. Removal of Battery Panel Block 2-4
2-8. Removal of Cassette Lid Assembly 2-4
2-9. Removal of Cabinet (L) Block 2-4
2-10. Removal of Control Switch Block (FK-8500) 2-4
2-11. Removal of Zoom Lens Block 2-5
2-12. Removal of DD-105 and PJ-81 Boards 2-5
2-13. Removal of VC-195 and SE-65 Boards 2-5
2-14. Service Position 2-6
2-15. Circuit Boards Location 2-7

3. BLOCK DIAGRAMS

3-1. Overall Block Diagram 3-1
3-2. Camera/Video Block Diagram 3-5
3-3. VTR/Camera Control Block Diagram 3-9
3-4. Servo Block Diagram 3-12
3-5. Mode Control Block Diagram 3-15
3-6. Audio Block Diagram 3-19
3-7. Color EVF Block Diagram 3-23
3-8. B/W EVF Block Diagram 3-27
3-9. Power Block Diagram 3-29

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. Frame Schematic Diagram 4-1
4-2. Printed Wiring Boards and Schematic Diagrams 4-6
- CD-181 (CCD Imager) Board 4-7
- SE-65 (Steady Shot) Board 4-9
- VC-195 (Camera, Y/C Processor, IN/OUT, REC/PB Head Amp, Servo/System Control, Servo, Audio, Mode Control) Board 4-13
- VC-195 (Camera 1) Board 4-18
- VC-195 (Camera 2) Board 4-21
- VC-195 (Y/C Processor) Board 4-25
- VC-195 (IN/OUT) Board 4-29
- VC-195 (REC/PB Head Amp) Board 4-33
- VC-195 (Servo/System Control) Board 4-37
- VC-195 (Servo) Board 4-40
- VC-195 (Audio) Board 4-43
- VC-195 (Mode Control) Board 4-47
- PJ-81 (AV IN/OUT) Board 4-51
- Control Switch Block (FK-8500/SS-8500) 4-54
- MA-311 (Stereo Mic, Laser Link) Board 4-55
- CF-49 (Control) Board 4-60
- VF-99 (B/W EVF (B/W EVF Model)) Board 4-68
- VF-119 (Color EVF (Color EVF Model)) Board 4-71
- VF-120 (Color EVF (Color EVF Model)) Board 4-76
- LB-54 (Back Light) Board 4-76
- DD-105 (Power) Board 4-82

5. ADJUSTMENTS

- 5-1. CAMERA SECTION ADJUSTMENTS 5-1
- 1-1. Preparations before Adjustment (Camera Section) 5-1
  - 1-1-1. List of Service Tools 5-1
  - 1-1-2. Preparations 5-2
  - 1-1-3. Precautions 5-4
  - 1. Setting the Switch 5-4
  - 2. Adjusting Procedure 5-4
  - 3. Subject 5-4
  - 1-1-4. Adjusting Remote Commander 5-5
  - 1. Using the adjusting remote commander 5-5
  - 2. Precautions upon using the adjusting remote commander 5-5
  - 1-1-5. Data Processing 5-6
- 1-2. Initialization of D, E, F Page Data 5-7
  - 1. Initialization of D, E, F Page Data 5-7
  - 2. Modification of D, E, F Page Data 5-7
  - 3. D Page Table 5-8
  - 4. F Page Table 5-9
  - 5. E Page Table 5-11
- 1-3. Camera System Adjustments 5-13
  - 1. G-CAM flip Adjustment 5-13
  - 2. Hall Adjustment 5-14
  - 3. Flange Back Adjustment 5-15
  - 3-1. Flange Back Adjustment (1) 5-15
  - 3-2. Flange Back Adjustment (2) 5-15
  - 4. Flange Back Check 5-16
  - 5. Picture Frame Setting 5-16
  - 6. Color Reproduction Adjustment 5-17
  - 7. IRIS IN/OUT Adjustment 5-18
  - 8. MAX GAIN Adjustment 5-18
  - 9. Auto White Balance Standard Data Input 5-19
  - 10. Auto White Balance Adjustment 5-19
  - 11. White Balance Check 5-20
  - 12. Angular Velocity Sensor Sensitivity Adjustment 5-21
- 1-4. Color Electronic Viewfinder System Adjustments (CCD-TR512E/TR730E) 5-22
  - 1. EVF Initial Data Input 5-22
  - 2. VCO Adjustment (VF-119 board) 5-23
  - 3. Bright Adjustment (VF-119 board) 5-23
  - 4. Contrast Adjustment (VF-119 board) 5-24
  - 5. Backlight Comsumption Current Adjustment (VF-120 board) 5-24
  - 6. White Balance Adjustment (VF-119 board) 5-24
- 1-5. Monochrome Electronic Viewfinder System Adjustments (CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR640E/TR840E/TR845E) 5-25
  - 1-5-1. Horizontal Slant Check 5-25
  - 1-5-2. Centering Adjustment 5-25
  - 1-5-3. Focus Adjustment 5-25
  - 1-5-4. Aberration Adjustment 5-26
  - 1-5-5. Horizontal Amplitude Adjustment (VF-99 board) 5-26
  - 1-5-6. Vertical Amplitude Adjustment (VF-99 board) 5-27
  - 1-5-7. Brightness Adjustments (VF-99 board) 5-27
  - 1-5-8. Horizontal Amplitude, Vertical Amplitude, Focus Check 5-27

- 5-2. MECHANICAL SECTION ADJUSTMENT 5-28
- 2-1. Operating without a Cassette 5-28
- 2-2. Tape path Adjustment 5-28
  - 1. Preparations for adjustments 5-28

- 5-3. VIDEO SECTION ADJUSTMENTS 5-29
- 3-1. Preparations before Adjustment 5-29
  - 3-1-1. Equipments to be Used 5-29
  - 3-1-2. Precautions in Adjusting 5-30
  - 3-1-3. Adjusting Connectors 5-30
  - 3-1-4. Connecting the Equipments 5-31
  - 3-1-5. Alignment Tape 5-31
  - 3-1-6. Input/Output Level and Impedance 5-33
  - 3-1-7. Recording Mode (Standard 8/Hi8) switching (Hi8 model) 5-33
  - 3-1-8. Service Mode 5-33
  - 1. Test mode setting 5-33
  - 2. Emergency memory address 5-34
  - 2-1. EMG CODE (Emergency Code) 5-34
  - 2-2. MSW Codes 5-35
  - 3. Bit value discrimination 5-36
  - 4. Switch check (1) 5-36
  - 5. Switch check (2) 5-37
  - 6. Headphone jack check 5-37
  - 7. Input/output selection check 5-37
  - 8. LED, LCD (display window) check 5-38
  - 9. Record of use check 5-38
- 3-2. System Control System Adjustment 5-39
  - 1. Initialization of D, E, F Page Data 5-39
  - 2. Battery End Adjustment (VC-195 board) 5-39
- 3-3. Servo System Adjustments 5-40
  - 1. CAP FG Offset Adjustment (VC-195 board) 5-40
  - 2. Switching Position Adjustment (VC-195 board) 5-40
- 3-4. Video System Adjustments 5-41
  - 1. 28 MHz Origin Oscillation Adjustment (VC-195 board) 5-41
  - 2. AFC f0 Adjustment (VC-195 board) 5-42
  - 3. Filter f0 Adjustment (VC-195 board) 5-42
  - 4. Y OUT Level Adjustment (VC-195 board) 5-43
  - 5. C OUT Level Adjustment (VC-195 board) 5-43
  - 6. RP Filter f0 Adjustment (VC-195 board) 5-43
  - 7. Hi8 REC Y Current Adjustment (VC-195 board) (CCD-TR840E/TR845E) 5-44
  - 8. Standerd8 REC Y Current Adjustment (VC-195 board) (CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E) 5-45
  - 9. Hi8 REC L Level Adjustment (VC-195 board) (CCD-TR840E/TR845E) 5-46
  - 10. Standerd8 REC L Level Adjustment (VC-195 board) (CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR640E/TR730E) 5-47
  - 11. REC C Current Adjustment (VC-195 board) 5-48
- 3-5. Stereo Audio System Adjustment (CCD-TR730E/TR840E/TR845E) 5-49
  - 1. 1.5 MHz Deviation Adjustment (VC-195 board) 5-50
  - 2. 1.7 MHz Deviation Adjustment (VC-195 board) 5-51
  - 3. BPF f0 Adjustment (VC-195 board) 5-52
- 3-6. Monaural Audio System Adjustment (CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E) 5-52
  - 1. 1.5 MHz Deviation Adjustment (VC-195 board) 5-53
  - 2. BPF Adjustment (VC-195 board) 5-53
- 3-7. Arrangement Diagram for Adjustment Parts 5-54

6. REPAIR PARTS LIST

6-1. Exploded Views 6-1
  - 6-1-1. Cabinet (L) Block Assembly 6-1
  - 6-1-2. Front Panel Block Assembly 6-2
  - 6-1-3. Cabinet (R) Block Assembly 6-3
  - 6-1-4. EVF Block Assembly (B/W EVF) (Except CCD-TR512E/TR730E) 6-4
  - 6-1-5. EVF Block Assembly (Color EVF) (CCD-TR512E/TR730E) 6-5
  - 6-1-6. Main Boards Block Assembly 6-6
  - 6-1-7. Battery Panel and Lens Block Assembly 6-7
  - 6-1-8. Zoom Lens Block Assembly 6-8
  - 6-1-9. Cassette Compartment Assembly 6-9
  - 6-1-10. LS Chassis Assembly 6-10
  - 6-1-11. Mechanism Chassis Assembly 6-11

6-2. Electrical Parts List 6-12

SECTION 1
GENERAL

This section is extracted from instruction manual of CCD-TR411E/TR412E/TR511E/TR640E/TR840E/TR845E

Before you begin

Using this manual

Перед началом эксплуатации

Использование данного руководства

The instructions in this manual are for the six models listed below. Before you start reading this manual and operating the unit, check your model number by looking at the bottom of your camcorder. The CCD-TR845E is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TR845E only."
As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.
You can hear the beep sound to confirm your operation.

Инструкции в данном руководстве изложены для шести нижеперечисленных моделей. Перед тем, как Вы начнете читать данное руководство и эксплуатировать аппарат, проверьте номер Вашей модели, посмотрев на нижнюю панель Вашей видеокамеры. Модель CCD-TR845E используется в иллюстративных целях. В противном случае наименование модели указывается на рисунках. Любые различия в работе четко указаны в тексте, как например, "Только CCD-TR845E".
Когда Вы будете читать данное руководство, учитывайте, что кнопки и установки на видеокамере показаны прописными буквами.
Прим. Установите выключатель POWER в положение CAMERA.
Вы можете слышать зуммерный звуковой сигнал для подтверждения Вашей работы.

Types of differences

Типы различий

CCD-	TR411E	TR412E	TR511E	TR640E	TR840E	TR845E
System/Система	8	8	8	8	Hi8	Hi8
S VIDEO/S VIDEO	—	—	—	—	●	●
Optical zoom/ Оптический трансфокатор	16x	16x	18x	18x	18x	18x
Digital zoom/ Цифровой трансфокатор	32x[1]	64x[2]	72x[3]	72x[3]	72x[3]	72x
NightShot/Ночная съемка	—	—	●	●	●	●
Steady Shot/ Устойчивая съемка	—	—	—	●	●	●
Remote sensor/ Датчик дистанционного управления	—	●	●	●	●	●
Fader function/ Функция регулировки уровня изображения	—	—	●	●	●	●
Stripe/Полосование	—	—	—	—	●	●
Manual focus/ Ручная фокусировка	—	—	●	●	●	●
Exposure/Экспозиция	—	—	●	●	●	●
Auto date/ Автоматическая дата	●	●	●	●	●	—
Index/Индекс	—	—	—	—	—	●
RC time code/ Временной код RC	—	—	—	—	—	●
Data code/Код данных	—	—	—	—	—	●
Audio/ Аудиосигнал	monaural монофонический	monaural монофонический	monaural монофонический	monaural монофонический	stereo стереофонический	stereo стереофонический

[1] 160x in some areas
[2] 200x in some areas
[3] 220x in some areas

[1] 160x в некоторых областях
[2] 200x в некоторых областях
[3] 220x в некоторых областях

Using this manual

Использование данного руководства

Note on TV colour systems

TV colour systems differ from country to country. To view your recordings on a TV, you need a PAL system-based TV.

Precaution on copyright

Television programmes, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Precautions on camcorder care

- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction, and sometimes this malfunction cannot be repaired **[a]**.
- Never leave the camcorder exposed to temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight **[b]**.

Примечание к системам цветного телевидения

Системы цветного телевидения отличаются в зависимости от страны. Для просмотра Ваших записей по телевизору Вам необходимо использовать телевизор, основанный на системе PAL.

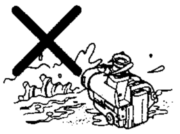
Предостережение об авторском праве

Телевизионные программы, кинофильмы, видеоленты и другие материалы могут быть защищены авторским правом.
Неправомочная запись таких материалов может противоречить условиям закона об авторском праве.

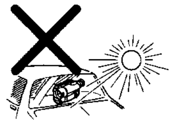
Предосторожности по уходу за видеокамерой

- Не позволяйте видеокамере делаться влажной. Предохраняйте видеокамеру от дождя или морской воды. Если Вы намочите видеокамеру, то это может вызвать неисправность аппарата, и в некоторых случаях эта неисправность не подлежит ремонту **[a]**.
- Никогда не оставляйте видеокамеру в месте с температурой свыше 60°C (140°F), как например, в автомобиле, остановленном на солнце или под прямыми солнечными лучами **[b]**.

[a]



[b]



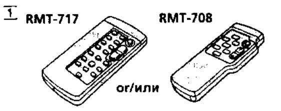
Checking supplied accessories

Проверка прилагаемых принадлежностей

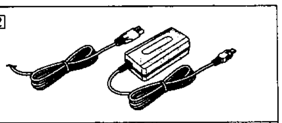
Check that the following accessories are supplied with your camcorder.

Проверьте, что следующие принадлежности прилагаются к Вашей видеокамере.

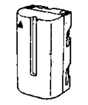
1



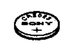
2



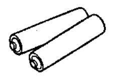
3



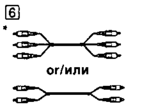
4



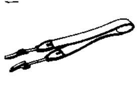
5



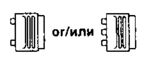
6



7



8



1 **Wireless Remote Commander** (1) (p. 108)
RMT-708: CCD-TR412E/TR511E/TR640E/TR840E
RMT-717: CCD-TR845E

2 **AC-L10A/L10B/L10C AC power adaptor** (1), **Mains lead** (1) (p. 9, 32)

3 **NP-F330 Battery pack** (1) (p. 8, 31)

4 **CR2025 Lithium Battery** (1) (p. 74)
The lithium battery is already installed in your camcorder.

5 **R6 (size AA) battery for Remote Commander** (2) (p. 109)
CCD-TR412E/TR511E/TR640E/TR840E/TR845E only

6 **A/V connecting cable** (1) (p. 24)
*For stereo model

7 **Shoulder strap** (1) (p. 110)

8 **21 pin adaptor** (1) (p. 25)

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

1 **Беспроводный пульт дистанционного управления** (1) (стр. 108)
RMT-708: CCD-TR412E/TR511E/TR640E/TR840E
RMT-717: CCD-TR845E

2 **Сетевой адаптер перем. тока AC-L10A/L10B/L10C** (1), **Сетевой провод** (1) (стр. 9, 32)

3 **Батарейный блок NP-F330** (1) (стр. 8, 31)

4 **Литиевая батарейка CR2025** (1) (стр. 74)
Литиевая батарейка уже установлена в Вашей видеокамере.

5 **Батарейка R6 (размером AA) для пульта дистанционного управления** (2) (стр.109)
Только CCD-TR412E/TR511E/TR640E/TR840E/TR845E

6 **Соединительный кабель аудио/видео** (1) (стр. 24)
* Для стереофонической модели

7 **Плечевой ремень** (1) (стр. 110)

8 **21-штырьковый адаптер** (1) (стр. 25)

Содержимое записи не может быть компенсировано, если запись или воспроизведение не выполняется вследствие повреждения видеокамеры, видеоленты и т.д.

Getting started

Installing and charging the battery pack

Подготовка к эксплуатации

Установка и зарядка батарейного блока

Before using your camcorder, you first need to install and charge the battery pack.

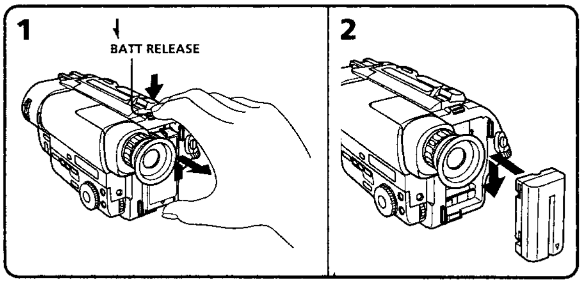
Installing the battery pack

(1) While pressing BATT RELEASE, slide the battery terminal cover in the direction of the arrow.
(2) Install the battery pack in the direction of the ▼ mark on the battery pack. Slide the battery pack down until it catches on the battery release lever and clicks.
Attach the battery pack to the camcorder securely.

Перед использованием Вашей видеокамеры Вам нужно сперва зарядить и установить батарейный блок.

Установка батарейного блока

(1) Нажав кнопку BATT RELEASE, передвиньте крышку батарейных контактов в направлении стрелки.
(2) Установите батарейный блок в направлении знака ▼ на батарейном блоке. Двигайте батарейный блок вниз до тех пор, пока он не будет захвачен рычагом освобождения батарейного блока и не защелкнется.
Надежно присоедините батарейный блок к видеокамере.



Note on the battery pack
Do not carry the camcorder by grasping the battery pack.

Примечание к батарейному блоку
Не носите видеокамеру, держа ее за батарейный блок.

Charging the battery pack

Charge the battery pack on a flat surface without vibration. The battery pack is charged a little in the factory.

(1) Open the DC IN jack cover and connect the supplied AC power adaptor to the DC IN jack with the plug's ▲ mark up.
(2) Connect the mains lead to the AC power adaptor.
(3) Connect the mains lead to the mains.
(4) Slide the POWER switch to OFF. Remaining battery time is indicated by the minutes on the display window. Charging begins.

When the remaining battery indicator becomes ▰, **normal charge** is completed. For **full charge**, which allows you to use the battery longer than usual, leave the battery pack attached for about 1 hour after normal charge is completed until FULL appears in the display window.
Before using the camcorder with the battery pack, unplug the AC power adaptor from the DC IN jack of the camcorder. You can also use the battery pack before it is completely charged.

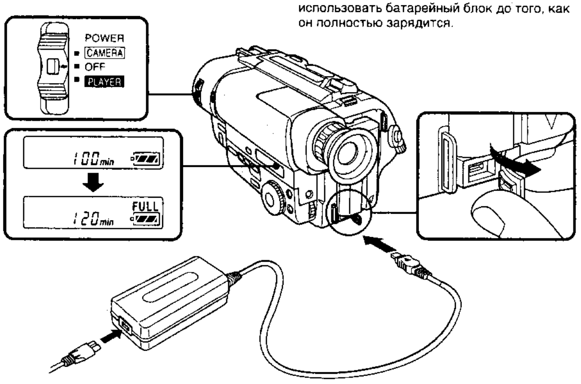
Зарядка батарейного блока

Заряжайте батарейный блок на плоской поверхности, неподверженной вибрации. Батарейный блок заряжен немного на заводе.

(1) Откройте крышку гнезда DC IN и подсоедините прилагаемый сетевой адаптер переменного тока к гнезду DC IN так, чтобы метка ▲ на штекере была расположена сверху.
(2) Подсоедините сетевой провод к сетевому адаптеру переменного тока.
(3) Подсоедините сетевой провод к сети.
(4) Передвиньте выключатель POWER положение OFF. Оставшееся время заряда батарейного блока будет отображаться в минутах в окошке дисплея. Начнется зарядка.

Если индикатор оставшегося заряда батарейного блока будет иметь вид ▰, это значит, что завершена **нормальная зарядка.** Для **полной зарядки**, которая позволяет Вам использовать батарейный блок дольше, чем обычно, оставьте батарейный блок присоединненым примерно на один час после завершения нормальной зарядки, пока в окошке дисплея не появится индикация FULL.
Перед использованием видеокамеры от батарейного блока отсоедините сетевой адаптер переменного тока от гнезда DC IN на видеокамере. Вы также можете использовать батарейный блок до того, как он полностью зарядится.

Getting started / Подготовка к эксплуатации



Notes
- The display shows "--- min" until the remaining battery time appears.
- Remaining battery time indication in the display window roughly indicates the recording time. Use it as a guide. It may differ from the actual recording time.
- If there is a slight difference in shape between the plug of mains lead and the terminal of AC power adaptor, it is ignorable for their mutual connection and power supply.
- Be sure to plug the mains lead deeply into the terminal of AC power adaptor so that it is firmly locked. If there is a gap between the plug of mains lead and the terminal of AC power adaptor, it does not affect the efficiency of the AC power adaptor.

Charging time

Battery pack	Charging time* (min.)
NP-F330 (supplied)	150 (90)
NP-F530/F550	210 (150)
NP-F730/F750	300 (240)
NP-F930/F950	390 (330)

The time required for a normal charge is indicated in parentheses.
* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor. (Lower temperatures require a longer charging time.)

Battery life

CCD-TR411E/TR412E/TR511E

Battery pack	Continuous recording time*	Typical recording time**
NP-F330 (supplied)	130 (115)	65 (60)
NP-F530	225 (200)	115 (105)
NP-F550	260 (230)	135 (120)
NP-F730	450 (405)	235 (210)
NP-F750	530 (480)	280 (250)
NP-F930	710 (640)	375 (335)
NP-F950	815 (730)	430 (385)

Примечания
- "--- min" отображается на дисплее, пока не появится время оставшегося заряда батарейного блока.
- Индикация оставшегося времени заряда батарейного блока в окошке дисплея приблизительно показывает время записи в окошке дисплея. Используйте ее в качестве руководства. Это может отличаться от фактического времени записи.
- Если существует небольшое различие по форме между штепсельным разъемом сетевых проводов и гнездом сетевого адаптера переменного тока, то это не влияет на их взаимное соединение и подачу питания.
- Обязательно вставьте разъем сетевого провода глубоко в гнездо сетевого адаптера переменного тока так, чтобы он был надежно зафиксирован. Если остается зазор между разъемом сетевого провода и гнездом сетевого адаптера переменного тока, то это не влияет на эффективность сетевого адаптера переменного тока.

Время зарядки

Батарейный блок	Время зарядки* (мин.)
NP-F330 (прилагается)	150 (90)
NP-F530/F550	210 (150)
NP-F730/F750	300 (240)
NP-F930/F950	390 (330)

Числа в скобках указывают время для нормальной зарядки.
* Приблизительное время в минутах для зарядки полностью разряженного батарейного блока с использованием прилагаемого сетевого адаптера переменного тока. (При более низких температурах потребуется более длительное время зарядки.)

Срок службы заряда батарейного блока

CCD-TR411E/TR412E/TR511E

Батарейный блок	Время непрерывной записи*	Время типичной записи**
NP-F330 (прилагается)	130 (115)	65 (60)
NP-F530	225 (200)	115 (105)
NP-F550	260 (230)	135 (120)
NP-F730	450 (405)	235 (210)
NP-F750	530 (480)	280 (250)
NP-F930	710 (640)	375 (335)
NP-F950	815 (730)	430 (385)

CCD-TR640E

Battery pack	Continuous recording time*	Typical recording time**
NP-F330 (supplied)	125 (110)	65 (55)
NP-F530	215 (190)	110 (100)
NP-F550	250 (220)	130 (115)
NP-F730	430 (385)	225 (200)
NP-F750	510 (460)	270 (240)
NP-F930	680 (610)	360 (320)
NP-F950	780 (700)	410 (370)

CCD-TR840E/TR845E

Battery pack	Continuous recording time*	Typical recording time**
NP-F330 (supplied)	120 (105)	60 (55)
NP-F530	205 (180)	105 (95)
NP-F550	240 (210)	125 (110)
NP-F730	410 (370)	215 (195)
NP-F750	490 (440)	255 (230)
NP-F930	650 (585)	340 (310)
NP-F950	750 (675)	395 (355)

Numbers in parentheses indicate the time when you use a normally charged battery.
Battery life will be shorter if you use the camcorder in a cold environment.
* Approximate continuous recording time at 25°C (77°F).
** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

CCD-TR640E

Батарейный блок	Время непрерывной записи*	Время типичной записи**
NP-F330 (прилагается)	125 (110)	65 (55)
NP-F530	215 (190)	110 (100)
NP-F550	250 (220)	130 (115)
NP-F730	430 (385)	225 (200)
NP-F750	510 (460)	270 (240)
NP-F930	680 (610)	360 (320)
NP-F950	780 (700)	410 (370)

CCD-TR840E/TR845E

Батарейный блок	Время непрерывной записи*	Время типичной записи**
NP-F330 (прилагается)	120 (105)	60 (55)
NP-F530	205 (180)	105 (95)
NP-F550	240 (210)	125 (110)
NP-F730	410 (370)	215 (195)
NP-F750	490 (440)	255 (230)
NP-F930	650 (585)	340 (310)
NP-F950	750 (675)	395 (355)

Числа в скобках указывают время, когда Вы используете нормально заряженный батарейный блок.
Срок службы заряда батарейного блока будет короче, если Вы используете видеокамеру в холодных условиях.
* Приблизительное время непрерывной записи при 25°C (77° F).
** Приблизительное время в минутах при записи с повторным началом/остановкой записи, режимом готовности, наездом видеокамеры и включением/выключением питания. Фактический срок службы заряда батарейного блока может быть короче.

Getting started / Подготовка к эксплуатации

Note on remaining battery time indication during recording
Remaining battery time is displayed in the viewfinder. However, the indication may not be displayed properly, depending on using conditions and circumstances.

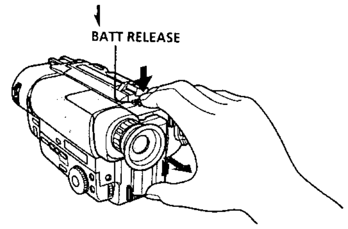
To remove the battery pack

While pressing BATT RELEASE, slide the battery pack in the direction of the arrow.

Примечание к индикации оставшегося времени работы батарейного блока во время записи.
Оставшееся время работы батарейного блока отображается в видоискателе. Однако, индикация может отображаться неправильно в зависимости от условий и обстоятельств использования.

Для снятия батарейного блока

Нажимая BATT RELEASE, передвиньте батарейный блок в направлении стрелки.



You can look at the demonstration of the functions available with this camcorder (p. 38).

Вы можете просмотреть демонстрацию функций, имеющихся в наличие у данной видеокамеры (стр. 38).

Inserting a cassette

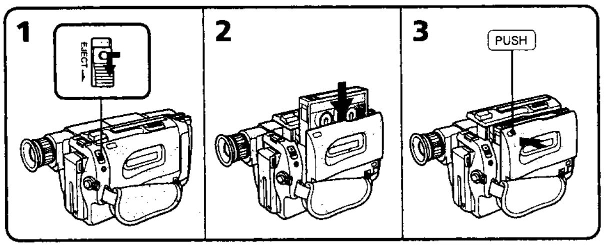
Вставка кассеты

Make sure that the power source is installed. When you want to record in the Hi8 system, use Hi8 video cassette **Hi8** (CCD-TR840E/TR845E only).

(1) While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow. The cassette compartment automatically lifts up and opens.
(2) Insert a cassette with the window facing out.
(3) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment. The cassette compartment automatically goes down.

Убедитесь, что источник питания установлен. Если Вы хотите выполнить запись в системе Hi8, то используйте Hi8-видеокассету **Hi8** (Только CCD-TR840E/TR845E).

(1) Нажимая маленькую синюю кнопку на выключателе EJECT, сдвиньте его в направлении стрелки. Кассетный отсек автоматически поднимается и открывается.
(2) Вставьте кассету окошком, обращенным наружу.
(3) Закройте кассетный отсек путем нажатия знака "PUSH" на кассетном отсеке. Кассетный отсек автоматически опустится вниз.



To eject the cassette

While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow.

To prevent accidental erasure

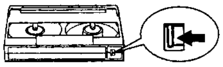
Slide the tab on the cassette to expose the red mark. If you insert the cassette with the red mark exposed and close the cassette compartment, the beeps sound for a while. If you try to record with the red mark exposed, the ⌧ and ≜ indicators flash, and you cannot record on the tape.
To re-record on this tape, slide the tab back out covering the red mark.

Для выталкивания кассеты

Нажимая маленькую синюю кнопку на выключателе EJECT, сдвиньте его в направлении стрелки. Кассетный отсек автоматически поднимается и открывается.

Для предотвращения случайного стирания

Сдвиньте лепесток на кассете, чтобы было видно красную метку. Если Вы вставите кассету, на которой видна красная метка, и закроете кассетный отсек, зуммерный сигнал будет звучать в течение некоторого времени. Если Вы попытаетесь выполнить запись с выставленной красной меткой, то индикаторы ⌧ и ≜ будут мигать в видоискателе и Вы не сможете произвести запись на ленту.
Для выполнения новой записи на такую ленту сдвиньте лепесток назад для закрывания красной метки.



Basic operations

Основные операции

Camera recording

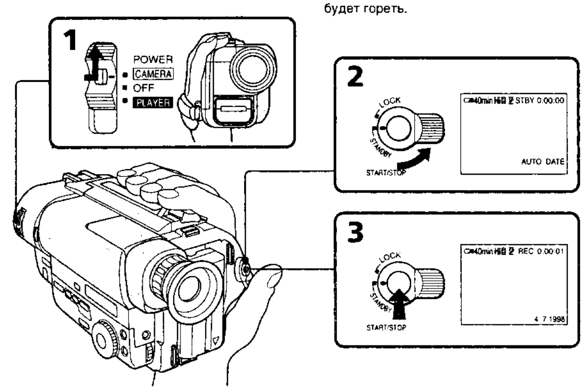
Запись с помощью видеокамеры

Make sure that the power source is installed, a cassette is inserted and that the START/STOP MODE switch is set to ♙ . Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.
When you use the camcorder for the first time, power on it and reset the date and time to your time before you start recording (p. 76). The date is automatically recorded for 10 seconds after you start recording **(AUTO DATE feature)**. This feature works only once a day. (CCD-TR411E/TR412E/TR511E/TR640E/TR840E only)

(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up to STANDBY.
(3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears. The red lamp lights up in the viewfinder. The camera recording/battery lamp located on the front of the camcorder also lights up.

Убедитесь, что источник питания установлен,кассета вставлена и переключатель START/STOP MODE установлен в положение ♙ . Перед тем как Вы начнете запись одноразовых событий, Вы можете захотеть сделать пробную запись для подтверждения, что видеокамера работает правильно.
Если Вы используете видеокамеру в первый раз, то включите ее и установите дату и время на Ваше местное время перед началом записи (стр. 76) Дата автоматически будет записываться в течение 10 секунд после начала записи **(функция AUTO DATE)**. Данная функция работает один раз в день. (только CCD-TR411E/TR412E/TR511E/TR640E/TR840E)

(1) Нажимая маленькую зеленую кнопку на выключателе POWER, установите его в положение CAMERA.
(2) Поверните STANDBY вверх в положение STANDBY.
(3) Нажмите START/STOP. Видеокамера начинает запись. Появляется индикатор "REC". В видоискателе загорается красная лампочка. Лампочка записи камерой/батареи, расположенная на передней панели видеокамеры, также будет гореть.



Camera recording

Запись с помощью видеокамеры

To stop recording momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder **(Standby mode)**.

To finish recording [b]

Press START/STOP again. Turn STANDBY down to LOCK and set the POWER switch to OFF. Then, eject the cassette.

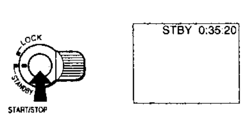
Для временной остановки записи [a]

Снова нажмите START/STOP. Индикатор "STBY" появляется в видоискателе **(режим готовности)**.

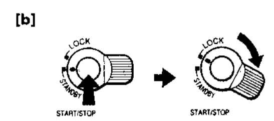
Для окончания записи [b]

Снова нажмите START/STOP. Поверните STANDBY вниз в положение LOCK и установите выключатель POWER в положение OFF. Затем вытолкните кассету.

[a]



[b]



Note

There is a little wear on the battery pack which is installed with camcorder. However, for getting remaining battery time indicated correctly, leave the battery pack installed after use.

To focus the viewfinder lens

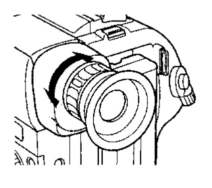
If you cannot see the indicators in the viewfinder clearly, or after someone else has used the camcorder, focus the viewfinder lens. Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.

Примечание

Будет происходить небольшая разрядка батарейного блока, который установлен в видеокамере. Однако, для получения точного показания времени оставшегося заряда батарейного блока оставьте батарейный блок установленным после использования.

Для фокусировки объектива видоискателя

Если Вы не можете четко видеть индикаторы в видоискателе или после того, как кто-то другой использовал видеокамеру, выполните фокусировку объектива видоискателя. Поверните кольцо регулировки объектива видоискателя, так, чтобы индикаторы в видоискателе были четко сфокусированы.



Camera recording

Запись с помощью видеокамеры

Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically for saving battery power as well as for preventing the battery and tape from wearing down. To resume Standby mode, turn STANDBY down and up again. To start recording, press START/STOP.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

Notes on the tape counter

- The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.
- If the tape is recorded in SP and LP modes mixed, the tape counter shows incorrect recording time. When you intend to edit the tape using the tape counter as a guide, record in same (SP or LP) mode.

Note on the beep sound

The beep sounds when you operate the camcorder. Several beeps also sound as a warning of any unusual condition of the camcorder.
Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

Примечание к режиму готовности

Если Вы оставляете видеокамеру в режиме готовности на 5 минут при вставленной кассете, видеокамера выключится автоматически в целях как для экономии заряда батарейного блока, так и для предотвращения износа батарейного блока ленты. Для восстановления режима готовности поверните STANDBY вниз, а затем снова вверх. Для начала записи нажмите START/STOP.

Примечание к записи

Когда Вы начинаете запись от начала ленты, перематывайте ленту в течение 15 секунд перед началом фактической записи. Это будет гарантировать, что Вы не пропустите каких-либо начальных фрагментов, когда будете воспроизводить ленту.

Примечания к счетчику ленты

- Счетчик ленты указывает время записи или воспроизведения. Используйте его в качестве руководства. Существует отставание по времени на несколько секунд от фактического времени. Для установки счетчика на нуль нажмите COUNTER RESET.
- Если лента записана с чередованием режимов SP и LP, то счетчик ленты будет показывать неправильное время записи. Если Вы намереваетесь производить монтаж ленты с использованием счетчика ленты в качестве указателя, то выполняйте запись в одном и том же режиме (SP или LP).

Примечания к зуммерному звуковому сигналу

Зуммерный сигнал звучит, когда Вы работаете с видеокамерой. Несколько зуммерных сигналов также будет звучать в качестве предупреждения какого-нибудь необычного состояния видеокамеры. Заметьте, что зуммерный сигнал не записывается на ленту. Если Вы не хотите слушать зуммерный сигнал, то выберите "OFF" в системе меню.

Note on the AUTO DATE feature
– CCD-TR411E/TR412E/TR511E/TR640E/TR840E only
The clock is set at the factory to London time for United Kingdom and to Paris time for the other European countries. You can reset the clock in the menu system. You can change the AUTO DATE settings by selecting ON or OFF in the menu system. The AUTO DATE feature shows the date automatically once a day.
However, the date may automatically appear more than once a day when:
- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set it to ON again in the menu system.

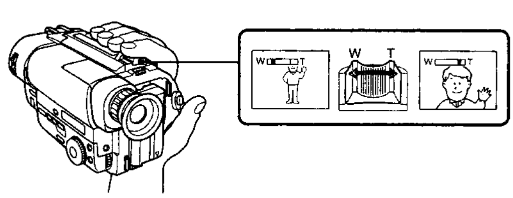
Using the zoom feature

Zooming is a recording technique that lets you change the size of the subject in the scene.
For more professional-looking recordings, use the zoom function sparingly.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)

Примечание к функции AUTO DATE
– Только CCD-TR411E/TR412E/TR511E/TR640E/TR840E
Часы установлены на заводе на лондоское время для моделей Соединенного Королевства и на парижское время для моделей других европейских стран. Вы можете переустановить часы в системе меню. Вы можете изменить установки AUTO DATE путем выбора ON или OFF в системе меню. Функция AUTO DATE показывает дату автоматически один раз в день. Однако, дата может автоматически появится более одного раза в день, когда:
- Вы заново устанавливаете дату и время.
- Вы вытолкнули ленту и вставили ее снова.
- Вы остановили запись в пределах 10 секунд.
- Вы установили функцию AUTO DATE в системе меню на OFF, а затем снова на ON.

Использование функции наезда видеокамеры

Наезд видеокамеры является техническим приемом записи, который позволяет Вам изменять размер объекта в кадре. Для более профессионального вида записей умеренно используйте функцию наезда видеокамеры.
Сторона "T": для телефото (объект приближается)
Сторона "W": для широкого угла съемки (объект удаляется)



Zooming speed (Variable speed zooming)
Move the power zoom lever a little for a slower zoom, move it further for a faster zoom.

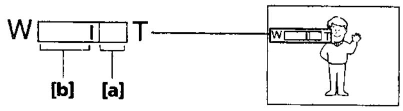
When you shoot a subject using a telephoto zoom
If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 80 cm (about 2 5/8 feet) away from the lens surface in the telephoto position, or about 1 cm (about 1/2 inch) away in the wide-angle position.

Notes on digital zoom
- More than 16x (CCD-TR411E/TR412E) or 18x (CCD-TR511E/TR640E/TR840E/TR845E) zoom is performed digitally, and the picture quality deteriorates as you go toward the "T" side. If you do not want to use the digital zoom, set the D ZOOM function to OFF in the menu system.
- The right side **[a]** of the power zoom indicator shows the digital zooming zone, and the left side **[b]** shows the optical zooming zone. If you set the D ZOOM function to OFF, the **[a]** zone disappears.

Скорость наезда видеокамеры (наезд с различной скоростью)
Передвиньте рычаг приводного трансфокатора немного для сравнительно медленного наезда видеокамеры; передвиньте его еще дальше для наезда на высокой скорости.

Когда Вы снимаете объект, используя наезд в режиме телефото
Если Вы не можете получить четкой фокусировки во время крайнего наезда в режиме телефото, перемещайте рычаг приводного трансфокатора в сторону "W" до тех пор, пока Вы не получите четкой фокусировки. Вы можете снимать объект, который по меньшей мере на 80 см удален от поверхности объектива в положении телефото, или удален приблизительно на 1 см в положении широкого угла.

Примечания к цифровому трансфокатору
- Трансфокатор более, чем с 16-кратным (CCD-TR411E/TR412E) или 18-кратным (CCD-TR511E/TR640E/TR840E/TR845E) увеличением создан в цифровом исполнении, и качество изображения ухудшается по мере Вашего движения в сторону "T". Если Вы не хотите использовать цифровой трансфокатор, установите функцию D ZOOM в системе меню на OFF.
- Правая сторона **[a]** индикатора приводного трансфокатора показывает зону цифровой трансфокации, а левая сторона **[b]** показывает зону оптической трансфокации. Если Вы установите функцию D ZOOM на OFF, то зона **[a]** исчезнет.



Selecting the START/STOP mode

Your camcorder has three modes. These modes enable you to take a series of quick shots resulting in a lively video.

(1) Set START/STOP MODE to the desired mode.
♙ : Recording starts when you press START/STOP, and stops when you press it again (normal mode).
ANTI GROUND SHOOTING ⊥ : The camcorder records only while you press down START/STOP so that you can avoid recording unnecessary scenes.
5SEC: When you press START/STOP, the camcorder records for 5 seconds and then stops automatically.

(2) Turn STANDBY up to STANDBY and press START/STOP. Recording starts.

If you selected 5SEC, the tape counter disappears and five dots appear. The dots disappear at a rate of one per second as illustrated below.

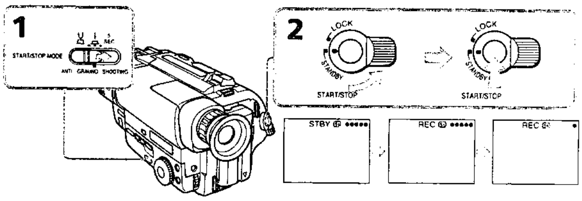
Выбор режима START/STOP

Ваша видеокамера имеет три режима. Эти режимы позволяют Вам снять серию коротких кадров, создавая в результате оживленную видеопрограмму.

(1) Установите переключатель START/STOP MODE на желаемый режим.
♙ : Запись начинается когда Вы нажимаете START/STOP и заканчивается, когда Вы нажимаете эту кнопку снова (нормальный режим)
ANTI GROUND SHOOTING ⊥ : Видеокамера производит запись только тогда, когда Вы держите START/STOP в нажатом состоянии, так, что Вы можете избежать записи ненужных сцен.
5SEC: Когда Вы нажимаете START/STOP, видеокамера производит запись в течение 5 секунд, а затем останавливается автоматически.

(2) Поверните STANDBY вверх в положение STANDBY и нажмите START/STOP. Запись начинается.

Если Вы выбрали 5SEC, счетчик ленты исчезает и появляются пять точек. Точки исчезают со скоростью по одной за секунду, как паказано ниже на рисунке.



To extend the recording time in 5SEC mode
Press START/STOP again before all the dots disappear. Recording continues for about 5 seconds from the moment you press START/STOP.

Note on START/STOP mode
You cannot use FADER in 5SEC or ⊥ mode (CCD-TR511E/TR640E/TR840E/TR845E only).

Для продления времени записи в режиме 5SEC
Нажмите START/STOP снова до того, как все точки исчезнут. Запись продолжается еще в течение 5 секунд с момента нажатия START/STOP.

Примечания к режиму START/STOP
Вы не можете использовать функцию FADER в режиме 5SEC или ⊥ (только CCD-TR511E/TR640E/TR840E/TR845E).

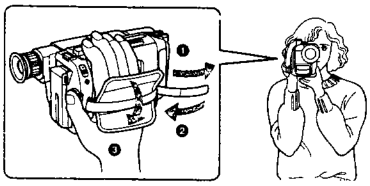
Hints for better shooting

For hand-held shots, you will get better results by holding the camcorder according to the following suggestions:
- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb **[a]**.
- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. Be sure to not touch the built-in microphone.
- Place your eye firmly against the viewfinder eyecup
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting angle. Lift the viewfinder up for recording from a low position **[b]**.

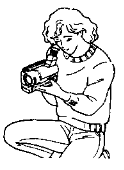
Советы для лучшей съемки

Для кадров при удержании видеокамеры в руках Вы получите лучшие результаты, если будете держать видеокамеру в соответствии со следующими рекомендациями:
- Держите видеокамеру крепко и закрепите ее с помощью ременного захвата так, чтобы Вы легко могли манипулировать регуляторами с помощью большого пальца **[a]**.
- Расположите Ваши локти по бокам от себя.
- Расположите Вашу левую руку под видеокамерой для ее поддержки. Ни в коем случае не трогайте встроенный микрофон.
- Надежно прижмите Ваш глаз к окуляру видоискателя.
- Используйте визирную рамку видоискателя в качестве руководства для определения горизонтального плана.
- Вы также можете записывать из низкого положения для получения интересного угла записи. Поднимите видоискатель вверх для записи из низкого положения **[b]**.

[a]



[b]



Hints for better shooting / Советы для лучшей съемки

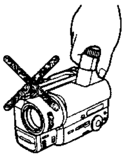
Place the camcorder on a flat surface or use a tripod
Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder.
When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 6.5 mm (9/32 inch). Otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

Cautions on the viewfinder
- Do not pick up the camcorder by the viewfinder **[c]**.
- Do not place the camcorder so as to point the viewfinder toward the sun. The inside of the viewfinder may be damaged. Be careful when placing the camcorder under sunlight or by a window **[d]**.

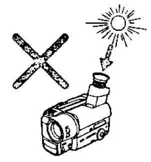
Располагайте видеокамеру на плоской поверхности или используйте треногу
Постарайтесь расположить видеокамеру сверху на столе или любой другой плоской поверхности подходящей высоты. Если у Вас есть тренога для фотоаппарата, Вы также можете использовать ее и для видеокамеры.
При прикреплении треноги не фирмы Sony убедитесь, что длина винта треноги менее 6,5 мм. В противном случае винт может повредить внутренние части видеокамеры.

Предосторожности к видоискателю
- Не поднимайте видеокамеру за видоискатель **[c]**.
- Не распологайте видеокамеру так, чтобы объектив были направлены в сторону солнца. Внутренние части видоискателя могут быть повреждены. Будьте осторожны при расположении видеокамеры под солнцем или возле окна **[d]**.

[c]



[d]



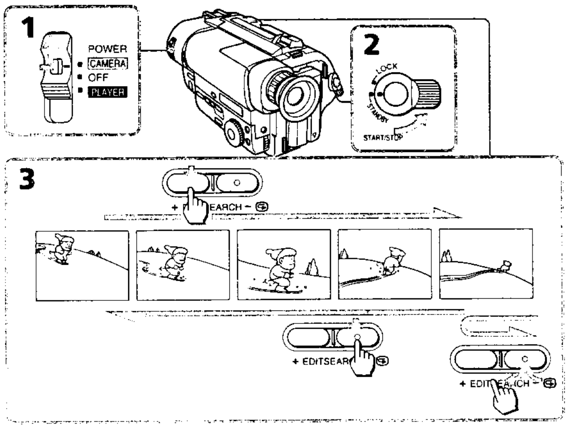
Checking the recorded picture / Проверка записанного изображения

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up to STANDBY.
(3) Press the – (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion play back **(Rec Review)**.
You can monitor the sound from the headphones (CCD-TR840E/TR845E only).
Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side **(Edit Search)**.

Используя EDITSEARCH, Вы можете пересмотреть последнюю записанную сцену или проверить записанное изображение в видоискателе.

(1) Нажимая маленькую зеленую кнопку на выключателе POWER, установите его в положение CAMERA.
(2) Поверните STANDBY вверх в положение STANDBY.
(3) На мгновение нажмите сторону – (⊜) кнопки EDITSEARCH; последние несколько секунд записанной части будут воспроизведены **(пересмотр записи)**.
Вы можете контролировать звук через головные телефоны (только CCD-TR840E/TR845E).
Держите нажатой сторону – кнопки EDITSEARCH до тех пор, пока видеокамера не вернется к желаемой сцене. Последняя записанная часть будет воспроизведена. Для продвижения вперед держите нажатой сторону + **(монтажный поиск)**.



Checking the recorded picture / Проверка записанного изображения

To stop playback
Release EDITSEARCH.

To begin re-recording
Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the cassette, the transition between the last scene you recorded and the next scene you record will be smooth.

Для остановки воспроизведения
Отпустите EDITSEARCH.

Снова для начала записи
Нажмите START/STOP. Запись начинается от точки, где Вы отпустили EDITSEARCH. При условии, что Вы не вытолкнете кассету, переход между последней сценой, которую Вы записали, и следующей сценой, которую Вы записываете, будет плавным.

Connections for playback / Соединения для воспроизведения

Connect the camcorder to your TV or VCR to watch the playback picture on the TV screen. There are some ways to connect the camcorder to your TV. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use mains for the power source.

Connecting directly to a TV/VCR with Video/Audio input jacks

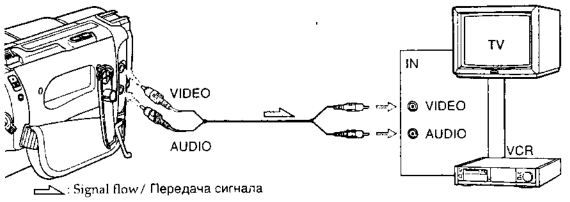
When connecting the A/V connecting cable, make sure you connect the plug to jacks of the same colour.
Open the jack cover. With using the supplied A/V connecting cable, connect the camcorder to the LINE IN inputs on the TV or VCR connected to the TV. Set the TV/VCR selector on the TV to VCR. When connecting to the VCR, set the input selector on the VCR to LINE.

Соединения для воспроизведения
Подсоедините видеокамеру к Вашему телевизору или КВМ для просмотра воспроизводимого изображения на экране телвизора. Существует несколько методов для подсоединения видеокамеры к Вашему телевизору. Для просмотра воспроизводимого изображения при подсоединении видеокамеры к телевизору, мы рекомендуем Вам использовать электрическую сеть в качестве источника питания.

Подсоединение прямо к телевизору/КВМ с входными гнездами аудио/видео

При подсоединении соединительного кабеля аудио/видео убедитесь, что Вы подсоединяете штекеры к гнездам одинакового цвета.
Откройте крышку гнезда. Подсоедините видеокамеру к вхдным гнездам LINE IN на телевизоре или подсоединенном к нему КВМ с использованием прилагаемого соединительного кабеля аудио/видео. Установите селектор входных сигналов на КВМ в положение LINE. При подсоединении к КВМ установите селектор входных сигналов на КВМ в положение LINE.

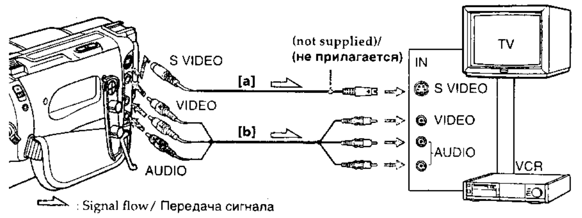
CCD-TR411E/TR412E/TR511E/TR640E



⇨ : Signal flow / Передача сигнала

Connections for playback / Соединения для воспроизведения

CCD-TR840E/TR845E



– CCD-TR840E/TR845E only
If your TV or VCR has an S video jack, connect using the S video connecting cable (not supplied) **[a]** to obtain a high quality picture . If you are going to connect the camcorder using the S video connecting cable (not supplied) **[a]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[b]**.

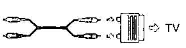
If your TV or VCR is a monaural type
– CCD-TR840E/TR845E only
Connect only the white plug for audio on both the camcorder and the VCR or the TV. With this connection, the sound is monaural even on stereo model.

If your TV/VCR has a 21-pin connector (EUROCONNECTOR)
Use the supplied 21-pin adaptor.

– Только CCD-TR840E/TR845E
Если Ваш телевизор или КВМ имеет гнездо S-видео, подсоедините с помощью соединительного кабеля S-видеосигналов (не прилагается) **[a]** для получения высокого качества изображения. Если Вы подсоединяете видеокамеру с использованием соединительного кабеля S-видеосигналов (не прилагается) **[a]**, Вам не нужно подсоединять желтый (видео) разъем соединительного кабеля аудио/видео **[b]**.

Если Ваш телевизор или КВМ монофонического типа
– Только CCD-TR840E/TR845E
Подсоедините только белый разъем для аудиосигналов и к видеомагнитофону и к КВМ или телевизору. При таком соединении звук будет монофоническом , даже если для стереофонической модели видеокамеры.

Если В Вашем ТВ/КВМ имеется 21-штырьковый разъем (EUROCONNECTOR)
Используйте прилагаемый 21-штырьковый адаптер.



To connect to a TV or VCR without Video/Audio input jacks
Use an RFU adaptor (not supplied).

Для подсоединения к телевизору или КВМ без входных гнезд аудио/видео
Используйте ВЧ-адаптер (не прилагается).

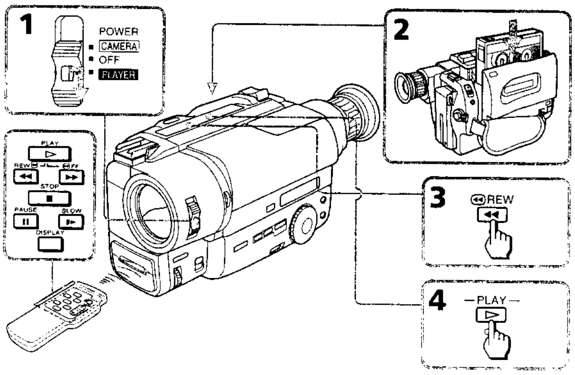
Playing back a tape / Воспроизведение ленты

You can monitor the playback picture in the viewfinder. You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR.

(1) While pressing the small green button on the POWER switch, set it to PLAYER. The video control buttons light up (CCD-TR511E/TR640E/TR840E/TR845E only).
(2) Insert the recorded tape with the window facing out.
(3) Press ◀◀ to rewind the tape.
(4) Press ▶ to start playback.

Вы можете просматривать изображение в видоискателе. Вы можете также просмотреть изображение на экране телевизора после подсоединения видеокамеры к телевизору или КВМ.

(1) Нажимая маленькую зеленую кнопку на выключателе POWER , установите его в положение PLAYER. Высветятся рабочие кнопки видеокамеры. (только CCD-TR511E/TR640E/TR840E/TR845E).
(2) Вставьте записанную ленту окошком, обращенным наружу.
(3) Нажмите ◀◀ для ускоренной перемотки ленты назад.
(4) Нажмите ▶ для начала воспроизведения.



To stop playback, press ■.
To rewind the tape, press ◀◀.
To fast-forward the tape rapidly, press ▶▶

Для остановки воспроизведения нажмите ■.
Для ускоренной перемотки ленты назад нажмите ◀◀.
Для ускоренной перемотки ленты вперед нажмите ▶▶.

Using the remote commander

– CCD-TR412E/TR511E/TR640E/TR840E/TR845E only
You can control playback using the supplied Remote Commander. Before using the Remote Commander, insert the R6 (size AA) batteries.

To display the viewfinder screen indicators on the TV

Press DISPLAY on the Remote Commander. To erase the indicators, press DISPLAY again.

Using headphones
Connect headphones (not supplied) to the ∩ jack (CCD-TR840E/TR845E only).

Note on the lens cover
The lens cover does not open when the POWER switch is set to PLAYER. Do not open the lens cover manually. It may cause malfunction.

Использование пульта дистанционного управления

– Только CCD-TR412E/TR511E/TR640E/TR840E/TR845E
Вы можете управлять воспроизведением с помощью прилагаемого пульта дистанционного управления. Перед использованием пульта дистанционного управления вставьте в него батарейки R6 (размером AA).

Для отображения индикаторов видоискателя на экране телевизора

Нажмите кнопку DISPLAY на пульте дистанционного управления. Для стирания индикаторов снова нажмите DISPLAY.

Исиользование головных телефонов
Подсоедините головные телефоны (не прилагаются) к гнезду ∩ (только CCD-TR840E/TR845E).

Примечание к крышке объектива
Крышка объектива не открывается, когда выключатель POWER установлен в положение PLAYER. Не открывайте крышку объектива вручную. Это может привести к неисправности.

Various playback modes

To view a still picture (playback pause)

Press ▮▮ during playback. To resume playback, press ▮▮ or ▶.

To locate a scene (picture search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (skip scan)

Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▶.

To view the picture at 1/5 speed (slow playback)

– CCD-TR412E/TR511E/TR640E/TR840E/TR845E only
Press ▮▶ on the Remote Commander during playback. To resume normal playback, press ▶. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

To view the picture at double speed

– CCD-TR845E only
For double speed playback in the reverse direction, press ◀II/<, then press x2 on the Remote Commander during playback. For double speed playback in the forward direction, press >/II▶, then press x2 during playback. To resume normal playback, press ▶.

Различные режимы воспроизведения

Для просмотра неподвижного изображения (пауза воспроизведения)

Нажмите ▮▮ во время воспроизведения. Для восстановления воспроизведения нажмите ▮▮ или ▶.

Для обнаружения фрагмента (поиск изображения)

Держите нажатой кнопку ◀◀ или ▶▶ во время воспроизведения. Для восстановления нормального воспроизведения отпустите кнопку.

Для контроля изображения на высокой скорости во время ускоренной перемотки ленты вперед или назад (поиск методом прогона)

Держите нажатой кнопку ◀◀ во время перемотки ленты назад или кнопку ▶▶ во время перемотки ленты вперед. Для восстановления нормального воспроизведения нажмите ▶.

Для просмотра изображения на 1/5 скорости (замедленное воспроизведение)

– Только CCD-TR412E/TR511E/TR640E/TR840E/TR845E
Нажмите ▮▶ на пульте дистанционного управления во время воспроизведения. Для восстановления нормального воспроизведения нажмите ▶. Если замедленное воспроизведение продолжается приблизительно в течение 1 минуты, аппарат переключится на нормальную скорость автоматически.

Для просмотра изображения с удвоенной скоростью

– Только CCD-TR845E
Для удвоения скорости воспроизведения в обратном направлении нажмите ◀II/<, а затем нажмите x2 на пульте дистанционного управления во время воспроизведения. Для удвоения скорости воспроизведения в направлении вперед нажмите >/II▶, а затем нажмите x2 во время воспроизведения. Для восстановления нормального воспроизведения нажмите ▶.

To view the picture frame-by-frame
– CCD-TR845E only

Press ◀II/< or >/II▶ on the Remote Commander in playback pause mode. If you keep pressing the button, you can view the picture at 1/25 speed. To resume normal playback, press ▶.

To change the playback direction
– CCD-TR845E only

Press ◀II/< on the Remote Commander for reverse direction or >/II▶ on the Remote Commander for forward direction during playback. To resume normal playback, press ▶.

To select the playback sound
– CCD-TR840E/TR845E only

Change the "HiFi SOUND" mode setting in the menu system.

Notes on playback
- Noise may appear when you use the still/slow/picture search function to play back the tape recorded in LP mode.
- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode. To resume playback, press ▶.
- Horizontal noise appears at the centre of the screen when you play back a tape in reverse if the RC time code or the Data Code is displayed on the screen. This is normal. (CCD-TR845E only)
- You can play back the tapes recorded in the Hi8 video system on the standard 8 mm camcorder (CCD-TR411E/TR412E/TR511E/TR640E only).

Displaying the date or time when you recorded - Data Code function

– CCD-TR845E only

Even if you did not record the date or time when you were recording, you can display the date or time when you recorded (Data Code) on the TV during playback or editing. The Data Code is also displayed in the viewfinder and the display window.

Для покадрового просмотра изображения
– Только CCD-TR845E

Нажмите ◀II/< или >/II▶ на пульте дистанционного управления в режиме паузы воспроизведения. Если Вы будете держать кнопку нажатой, то Вы можете просматривать изображение на 1/25 скорости. Для восстановления нормального воспроизведения нажмите ▶.

Для изменения направления воспроизведения
– Только CCD-TR845E

Нажмите ◀II/< на пульте дистанционного управления для выбора обратного направления или >/II▶ на пульте дистанционного управления для выбора направления вперед во время воспроизведения. Для восстановления нормального воспроизведения нажмите ▶.

Для выбора воспроизводимого звука
– Только CCD-TR840E/TR845E

Измените установку "HiFi SOUND" в системе меню.

Примечания к воспроизведению
- Помехи могут появляться, когда Вы используете функцию стоп-кадра/замедленного воспроизведения/поиска изображения при воспроизведении ленты, записанной в режиме LP.
- "Тянучки" появляются и звук будет приглушен в различных режимах воспроизедения.
- Если режим паузы воспроизведения продолжается в течение 5 минут, видеокамера автоматически войдет в режим останова. Для восстановления воспроизведения нажмите ▶.
- Горизонтальные помехи появляются в центре экрана, когда Вы воспроизводите ленту в обратном направлении, если временной код RC или код данных отображается на экране. Это является нормальным. (только CCD-TR845E)
- Вы можете воспроизвод ить ленты, записанные в видеосистеме Hi8 на стандартной видеокамере с 8-лентой (только CCD-TR411E/TR412E/TR511E/TR640E).

Отображение даты или времени Вашей записи - функция кода данных

– Только CCD-TR845E

Даже если Вы не записали дату или время, когда Вы выполняли запись, Вы можете отобразить дату или время, когда выполнялась запись (код данных), на экране телевизора во время воспроизведения или монтажа. Код данных также отображается в видоискателе и в окошке дисплея.

To display the date or time when you recorded

Press DATE or TIME on the camcorder. To make the date or time disappear, press it again.
To display the date and time when you recorded, press TIME (or DATE) after pressing DATE (or TIME). To make the date and time disappear, press DATE and TIME again.

To display simultaneously the date and time when you recorded

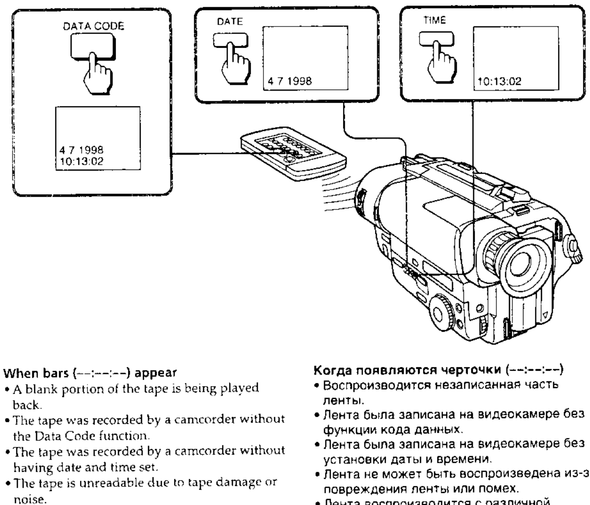
Press DATA CODE on the Remote Commander. To make the date and time disappear, press it again.

Для отображения даты или времени Вашей записи

Нажмите DATE или TIME на видеокамере. Для того, чтобы дата или время исчезли, снова нажмите эту кнопку.
Для отображения даты и времени выполнения записи нажмите TIME (или DATE) после нажатия DATE (или TIME). Для того, чтобы дата и время исчезли снова нажмите DATE и TIME.

Для одновременного отображения даты и времени Вашей записи

Нажмите DATA CODE на пульте дистанционного управленя. Для того, чтобы дата и время исчезли, снова нажмите эту кнопку.



When bars (--:--:--) appear
- A blank portion of the tape is being played back.
- The tape was recorded by a camcorder without the Data Code function.
- The tape was recorded by a camcorder without having date and time set.
- The tape is unreadable due to tape damage or noise.
- The tape is being played back in variable speed (Slow Playback, etc.) .
- An index signal is marked, the RC time code is written, or PCM after recording is made on the tape.

Когда появляются черточки (--:--:--)
- Воспроизводится незаписанная часть ленты.
- Лента была записана на видеокамере без функции кода данных.
- Лента была записана на видеокамере без установки даты и времени.
- Лента не может быть воспроизведена из-за повреждения ленты или помех.
- Лента воспроизводится с различной скоростью (замедленное воспроизведение и т.д.).
- Был отмечен индексный сигнал, записан временной код RC или PCM после выполнения записи на ленте.

Advanced operations

Using alternative power sources

You can choose any of the following power sources for your camcorder: battery pack, mains, alkaline batteries and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	Mains	Supplied AC power adaptor
Outdoors	Battery pack	Battery pack NP-F330 (supplied), NP-F530, NP-F550, NP-F730, NP-F750, NP-F930, NP-F950
	Size LR6 (AA) Alkaline battery	Sony battery case EBP-L7
In the car	12 V or 24 V car battery	Sony car battery charger DC-V515A

Notes on power sources
- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape.
- The DC IN jack has power source priority. This means that the battery pack cannot supply any power if the mains lead is connected to the DC IN jack, even when the mains lead is not plugged into the mains.

Усовершенствованные операции

Использование альтернативных источников питания

Вы можете выбрать любой из следующих источников питания для Вашей видеокамеры: батарейный блок электрическую сеть, щелочные батарейки и 12/24 В автомобильный аккумулятор. Выберите подходящий источник питания в зависимости от того, где Вы хотите использовать Вашу видеокамеру.

Место	Источник питания	Используемые принадлежности
В помещении	Электрическая сеть	Прилагаемый сетевой адаптер перем. тока
На улице	Батарейный блок	Батарейный блок NP-F330 (прилагается), NP-F530, NP-F550, NP-F730, NP-F750, NP-F930, NP-F950
	Щелочная батарейка размера LR6 (AA)	Батарейная камера EBP-L7
В автомобиле	12 В или 24 В автомобильный аккумулятор	Зарядный выпрямитель автомобильного аккумулятора DC-V515A

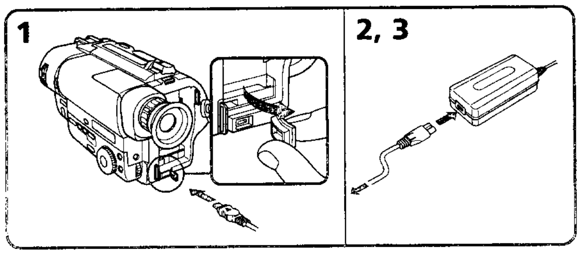
Примечания по источникам питания
- Отсоединение источника питания или снятие батарейного блока во время записи или воспроизведения может повредить вставленную ленту.
- Гнездо DC IN обладает приоритетом в качестве источника питания. Это означает, что питание от батарейного блока подаваться не может, если сетевой провод подсоединен к гнезду DC IN, даже кода сетевой провод не включен в электрическую сеть.

Using the mains

(1) Open the DC IN jack cover, and connect the AC power adaptor to the DC IN jack on the camcorder.
(2) Connect the mains lead to the AC power adaptor.
(3) Connect the mains lead to the mains.

Использование электрической сети

(1) Открейте крышку гнезда DC IN и подсоедините сетевой адаптер переменного тока к гнезду DC IN на видеокамере.
(2) Подсоедините сетевой провод к сетевому адаптеру переменного тока.
(3) Подсоедините сетевой провод к сети.



WARNING
The mains lead must only be changed at a qualified service shop.

PRECAUTION
The set is not disconnected from the AC power source (mains) as long as it is connected to the mains, even if the set itself has been turned off.

Note
Keep the AC power adaptor away from the camcorder if the picture is disturbed.

ПРЕДУПРЕЖДЕНИЕ
Сетевой провод должен быть заменен только в мастерской квалифицированного обслуживания.

ПРЕДОСТЕРЕЖЕНИЕ
Аппарат не отключается от источника питания перем. тока (электрической сети) до тех пор, пока он подключен к электрической сети, даже если сам аппарат выключен.

Примечание
Держите сетевой адаптер переменного тока подальше от видеокамеры, если изображение содержит помехи.

Using alternative power sources

Использование альтернативных источников питания

Using a car battery

Use Sony DC-V515A car battery charger (not supplied). Connect the car battery cord to the cigarette lighter socket of a car (12 V or 24 V). Refer to the operating instructions of your car battery charger.

To remove the car battery charger
The car battery charger is removed in the same way as the battery pack.

This mark indicates that this product is a genuine accessory for Sony video products.
When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

Использование автомобильного аккумулятора

Используйте зарядный выпрямитель автомобильного аккумулятора Sony DC-V515A (не прилагается). Подсоедините шнур автомобильного аккумулятора к гнезду сигаретного прикуривателя автомобиля (12 В или 24 В). Обратитесь к инструкции по эксплуатации Вашего автомобильного зарядного выпрямителя.

Для снятия зарядного выпрямителя автомобильного аккумулятора
Зарядный выпрямитель автомобильного аккумулятора снимается таким же образом, как и батарейный блок.

Настоящий знак указывает, что данная продукция является подлинной принадлежностью видеопродукции Sony.
Если Вы покупаете видеопродукцию Sony, то мы рекомендуем, чтобы Вы покупали принадлежности, помеченные знаком "GENUINE VIDEO ACCESSORIES".

Changing the mode settings

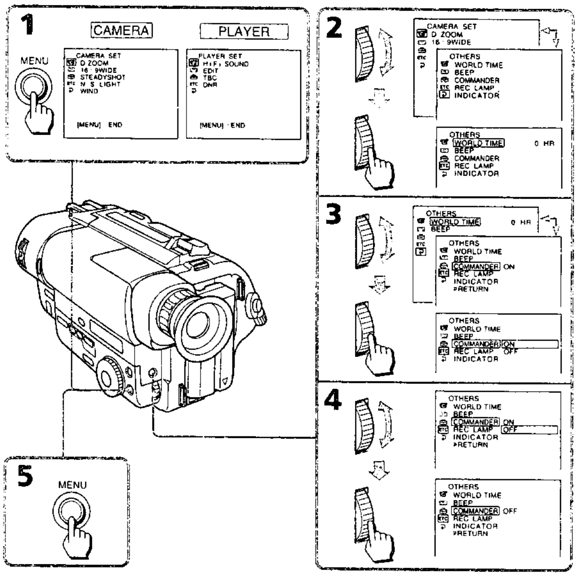
Изменение установок режимов

You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

(1) Press MENU to display the menu.
(2) Turn the control dial to select the desired icon in the left side of the menu, then press the dial.
(3) Turn the control dial to select the desired item, then press the dial.
(4) Turn the control dial to select the desired mode, then press the dial.
If you want to change the other modes, repeat steps 3 and 4. If you want to change the other items, select ⮐ RETURN and press the dial, then repeat steps from 2 to 4.
(5) Press MENU or select ⮐ icon to erase the menu display.

Вы можете изменять установки режимов в системе меню для большего наслаждения особенностями и функциями видеокамеры.

(1) Нажмите MENU для отображения меню.
(2) Поверните регулировочный диск выбора пиктограммы с левой стороны меню, а затем нажмите диск.
(3) Поверните регулировочный диск для выбора желаемой установки, а затем нажмите диск.
(4) Поверните регулировочный диск для выбора желаемого режима, а затем нажмите диск. Если Вы хотите изменить другие режимы, повторите пункты 3 и 4. Если Вы хотите изменить другие установки выберите ⮐ RETURN и нажмите диск, а затем повторите пункты 2 – 4.
(5) Нажмите MENU или выберите пиктограмму ⮐ для стирания дисплея меню.



Note on the menu display
Depending on the model of your camcorder, the menu display may be different from that in this illustration.

Note on changing the mode setting
Menu items differ depending on the setting of the POWER switch to PLAYER or CAMERA.

Selecting the mode setting of each item

Items for both CAMERA and PLAYER modes

REMAIN* <AUTO/ON>
- Select AUTO when you want to display the remaining tape bar
  - for about 8 seconds after the camcorder turns on and calculates the remainder of the tape.
  - for about 8 seconds after a cassette is inserted and the camcorder calculates the remainder of the tape.
  - for about 8 seconds after ► PLAY is pressed in PLAYER mode.
  - for the period of tape rewinding, forwarding or picture search in PLAYER mode.
  - for about 8 seconds after DISPLAY on the Remote Commander is pressed to display the screen indicator.
- Select ON to always display the remaining tape indicator.

COUNTER* <NORMAL/TIME CODE> (CCD-TR845E only)
- Normally select NORMAL.
- In PLAYER mode, select TIME CODE to display the RC time code in order to edit more precisely or to check the total time of the recorded part from the beginning of the tape. The RC time code indicates "hours, minutes, seconds, frames" in the form of "0:00:00:00". However, "frames" is not indicated in CAMERA mode.

Примечание к дисплею меню
В зависимости от модели Вашей видеокамеры дисплей меню может отличаться от описанного в данной инструкции по эксплуатации.

Примечание к изменению установок режимов
Установки меню отличаются в зависимости от нахождения выключателя POWER в положении PLAYER или CAMERA.

Выбор режима каждой установки

Установки для режимов и CAMERA и PLAYER

REMAIN* <AUTO/ON>
- Выберите AUTO, если Вы хотите отобразить шкалу оставшейся ленты
  - приблизительно через 8 секунд после включения видеокамеры и вычисления остатка ленты.
  - приблизительно через 8 секунд после установки кассеты и вычисления остатка ленты.
  - приблизительно через 8 секунд после нажатия ► в режиме PLAYER.
  - на период ускоренной перемотки ленты назад, вперед или поиска изображения в режиме PLAYER.
  - приблизительно через 8 секунд после нажатия DISPLAY на пульте дистанционного упрвления для отображения индикатора на экране.
- Выберите ON для постоянного отображения индикатора оставшейся ленты.

COUNTER* <NORMAL/TIME CODE> (Только CCD-TR845E)
- Обычно выбирайте NORMAL.
- В режиме PLAYER выберите TIME CODE для отображения временного кода RC в целях выполнения более точного монтажа или для проверки общего времени записанной части от начала ленты. Временной код RC указывает "часы, минуты, секунды, кадры, в форме "0:00:00:00". Однако, "кадры" не будут показаны в режиме CAMERA.

LTR SIZE* <NORMAL/2x>
- Normally select NORMAL.
- Select 2x to display selected menu item by twice size of normal.

ETC BEEP* <ON/OFF>
- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

ETC COMMANDER <ON/OFF> (CCD-TR412E/TR511E/TR640E/TR840E/TR845E only)
- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

ETC INDICATOR* <BL ON/BL OFF> (CCD-TR840E/TR845E only)
- Select BL ON to light up the display window.
- Select BL OFF to turn off the back light of display window.

When you use the AC power adaptor as a power source, this item is not displayed in the menu.

Items for CAMERA mode only

D ZOOM* <ON/OFF>
- Select ON to activate digital zooming.
- Select OFF to not use the digital zoom. The camcorder goes back to 16x (CCD-TR411E/TR412E) or 18x (CCD-TR511E/TR640E/TR840E/TR845E) zoom.

16:9WIDE* <OFF/CINEMA/16:9FULL>
- Normally select OFF.
- Select CINEMA to record in CINEMA mode.
- Select 16:9FULL to record in 16:9FULL mode.

STEADYSHOT* <ON/OFF> (CCD-TR640E/TR840E/TR845E only)
- Normally select ON.
- Select OFF to release the Steady Shot function.

LTR SIZE* <NORMAL/2x>
- Обычно выбирайте NORMAL.
- Выберите 2x для отображения выбранной установки меню в два раз больше нормального размера.

ETC BEEP* <ON/OFF>
- Выберите ON, чтобы зуммерные сигналы звучали, когда Вы начинаете/останавливаете запись и т.д.
- Выберите OFF, если Вы не хотите слышать зуммерный звуковой сигнал.

ETC COMMANDER <ON/OFF> (Только CCD-TR412E/TR511E/TR640E/TR840E/TR845E)
- Выбирайте ON при использовании прилагаемого к видеокамере пульта дистанционного управления.
- Выберите OFF, если пульт дистанционного управления не используется.

ETC INDICATOR* <BL ON/BL OFF> (Только CCD-TR840E/TR845E)
- Выберите BL ON для подсвечивания окошка дисплея.
- Выберите BL OFF для выключения задней подсветки окошка дисплея.

Когда Вы используете сетевой адаптер переменного тока, данная установка не отображается в меню.

Установки только для режима CAMERA

D ZOOM * <ON/OFF>
- Выберите ON для активизации цифровой трансфокации.
- Выберите OFF при неиспользовании цифровой трансфокации. Видеокамера возвращается к 16-кратной (CCD-TR411E/TR412E) или 18-кратной (CCD-TR511E/TR640E/TR840E/TR845E) трансфокации.

16:9WIDE* <OFF/CINEMA/16:9FULL>
- Обычно выбирайте OFF.
- Выберите CINEMA для записи в режиме CINEMA.
- Выберите 16:9FULL для записи в режиме 16:9FULL.

STEADYSHOT* <ON/OFF> (Только CCD-TR640E/TR840E/TR845E)
- Обычно выбирайте ON.
- Выбирайте OFF для отключения функции устойчивой съемки.

N.S.LIGHT* <ON/OFF> (CCD-TR511E/TR640E/TR840E/TR845E only)
- Normally select ON.
- Select OFF to not use the NightShot Light function.

WIND <ON/OFF> (CCD-TR840E/TR845E only)
- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

REC MODE* <SP/LP>
- Select SP when recording in SP (standard play) mode.
- Select LP when recording in LP (long play) mode.

When a tape recorded on this camcorder in LP mode is played back on other types of 8mm camcorders or VCRs, the playback quality may not be as good as that on this camcorder.

ORC TO SET*

Select this item to automatically adjust the recording condition to get the best possible recording.
If you have already performed this function, "ORC ON" is displayed.

CLOCK SET*

Reset the date or time.

AUTO DATE* <ON/OFF> (CCD-TR411E/TR412E/TR511E/TR640E/TR840E only)
- Select ON to record the date for 10 seconds after recording has started.
- Select OFF to not record the date.

N.S.LIGHT* <ON/OFF> (Только CCD-TR511E/TR640E/TR840E/TR845E)
- Обычно выбирайте ON.
- Выберите OFF при неиспользовании функции освещения ночной съемки.

WIND <ON/OFF> (Только CCD-TR840E/TR845E)
- Выберите ON для уменьшения шума ветра при записи на сильном ветру.
- Обычно выбирайте OFF.

REC MODE* <SP/LP>
- Выберите SP при записи в режиме SP (стандартного воспроизведения).
- Выберите LP при записи в режиме LP (удлиненного воспроизведения).

Когда лента, записанная на данной видеокамере в режиме LP, воспроизводится на других типах 8 мм видеокамер или КВМ, качество воспроизведения может быть не таким хорошим, как при воспроизведении на данной видеокамере.

ORC TO SET*

Выберите данную установку для автоматической регулировки условий записи для получения по возможности наилучшей записи.
Если Вы уже задействовали эту функцию, то "ORC ON" будет отображено.

CLOCK SET*

Выберите эту установку для переустановки даты или времени.

AUTO DATE* <ON/OFF> (Только CCD-TR411E/TR412E/TR511E/TR640E/TR840E)
- Выберите ON для записи даты в течение 10 секунд после начала записи.
- Выберите OFF, чтобы дата не записывалась.

DEMO MODE* <ON/OFF>
- Select ON to make the demonstration appear.
- Select OFF to deactivate the demònstration mode.

Notes on DEMO MODE
- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you set the POWER switch to CAMERA without inserting a cassette.
  Note that you cannot select STBY of DEMO MODE in the menu system.
- You cannot select DEMO MODE when a cassette is inserted in the camcorder.
- If you insert a cassette during the demonstration, the demonstration stops. You can start recording as usual. DEMO MODE automatically returns to STBY.
- When NIGHTSHOT is set to ON, "NIGHTSHOT" appears in the viewfinder and the demonstration does not start. (CCD-TR511E/TR640E/TR840E/TR845E only)

To look at the demonstration at once

Eject the cassette, if inserted. Select ON of DEMO MODE and erase the menu display. The demonstration will begin.
When you turn off the camcorder once, DEMO MODE automatically returns to STBY.

WORLD TIME*

Select this item to set the clock by a time difference.

REC LAMP* <ON/OFF>
- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

DEMO MODE* <ON/OFF>
- Выберит ON для появления демонстрации.
- Выберите OFF для отключения функции демонстрации.

Примечания к DEMO MODE
- DEMO MODE устанавливается на заводе на STBY (готовность) и демонстрация начинается приблизительно через 10 минут после установки выключателя POWER в положение CAMERA без вставки кассеты.
  Заметьте, что Вы не можете выбирать STBY для режима DEMO MODE в системе меню.
- Вы не можете выбрать DEMO MODE, если кассета вставлена в видеокамеру.
- Если Вы вставите кассету во время демонстрации, то демонстрация прекращается. Вы можете начать запись, как обычно. DEMO MODE автоматически возращается к STBY.
- Если функция NIGHTSHOT установлена во включенное положение ON, в видоискателе появится индикация "NIGHTSHOT" и демонстрация начинаться не будет. (Только CCD-TR511E/TR640E/TR840E/TR845E)

Для безотлагательного просмотра демонстрации

Вытолкните кассету, если она вставлена. Выберите ON в установке DEMO MODE и сотрите дисплей меню. Начинается демонстрация.
Когды Вы выключите видеокамеру DEMO MODE автоматически возвращается к STBY.

WORLD TIME*

Выберите данную функцию для установки часов по разнице во времени.

REC LAMP* <ON/OFF>
- Выберите OFF, если Вы не хотите, чтобы загоралась лампочка записи камерой/батареи на передней панели аппарата.
- Обычно выбирайте ON.

Items for PLAYER mode only

HiFi SOUND <STEREO/1/2> (CCD-TR840E/TR845E only)
- Normally select STEREO.
- Select 1 or 2 to play back a dual sound track tape.

EDIT <ON/OFF>
- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

TBC* <ON/OFF> (CCD-TR840E/TR845E only)
- Normally select ON, to correct for jitter.
- Select OFF to not correct for jitter. The picture may not be steady when played back.

Note on TBC setting

Set TBC to OFF when:
- Playing back a tape you have dubbed over.
- Playing back a tape on which you recorded the signal of a TV game or similar machine.
- The playback picture fluctuates.

DNR* <ON/OFF> (CCD-TR840E/TR845E only)
- Normally select ON to reduce picture noise.
- Select OFF if the picture has a lot of movement, causing a conspicuous afterimage.

NTSC PB* <ON PAL TV/NTSC 4.43>
- Normally select ON PAL TV.
- Select NTSC 4.43 if your TV has the NTSC 4.43 mode when playing back a tape recorded in the NTSC colour system.
  When you play back on a Multi System TV, select the best mode while watching the picture on the TV.

The following settings work only during playback

EDIT, HiFi SOUND, TBC and DNR.

* These settings are retained even when the battery is removed, as long as the lithium battery is in place.

Установки только для режима PLAYER

HiFi SOUND <STEREO/1/2> (Только CCD-TR840E/TR845E)
- Обычно выбирайте STEREO.
- Выберите 1 или 2 для воспроизведения ленты с двойной звуковой дорожкой.

EDIT <ON/OFF>
- Выберите ON для сведения помех к минимуму во время монтажа.
- Обычно выбирайте OFF.

TBC* <ON/OFF> (Только CCD-TR840E/TR845E)
- Обычно выбирайте ON для коррекции дрожания.
- Выберите OFF для отмены коррекции. Изображение может быть не устойчивым при воспроизведении.

Примечания к установке TBC

Установите TBC на OFF, когда:
- Воспроизводится лента, которую Вы перезаписали.
- Воспроизводится лента, на которую Вы записали сигналы телеигры или подобного компьютерного устройства.
- Воспроизводимое изображение колеблется.

DNR* <ON/OFF> (Только CCD-TR840E/TR845E)
- Обычно выбирайте ON для снижения помех на изображении.
- Выберите OFF, если изображение содержит множество движений, вызывая заметные послеизображения.

NTSC PB* <ON PAL TV/NTSC 4.43>
- Обычно вибирайте ON PAL TV.
- Выберите NTSC 4.43, если в Вашем телевизоре имеется режим NTSC 4.43 во время воспроизведения ленты, записанной в системе цветмого телевидения NTSC.
  Если Вы воспроизводите на мультисистемном телевизоре, то выберите наилучший режим во время просмотра изображения на экране телевизора.

Следующие устновки работают только во время воспроизведения

EDIT, HiFi SOUND, TBC и DNR.

* Эти установки остаются в силе даже при снятии батарейного блока до тех пор, пока литиевая батарейка находится на месте.

Shooting with backlighting

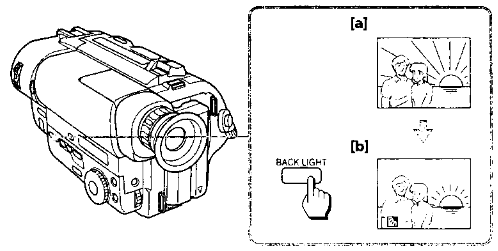
When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ▣ indicator appears in the viewfinder.

Съемка с задней подсветкой

Когда Вы снимаете объект с источником света позади объекта или объект на освещенном фоне, используйте функцию BACK LIGHT.

Нажмите BACK LIGHT. Индикатор ▣ появляется в видоискателе.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ▣ indicator disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:
- A subject with a light source nearby or a mirror reflecting light.
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

To make a fine adjustment

You can adjust the exposure manually. However, when you adjust the exposure manually, BACK LIGHT does not operate.

[a] Объект является слишком темным из-за задней подсветки.
[b] Объект становится ярким с помощью компенсации задней подсветки.

После съемки

Не забудьте отключить состояние этой регулировки путем нажатия BACK LIGHT снова. Индикатор ▣ исчезнет. В противном случае изображение будет слишком ярким в условиях нормального освещения.

Данная функция является эффективной в следующих условиях:
- Для объекта, расположенного рядом с источником света или зеркалом отражающим свет.
- Белый объект на белом фоне. Особенно, когда Вы снимаете человека в блестящей одежде из шелка или синтетического волокна, его или ее лицо может стать темным, если Вы не будете использовать данную функцию.

Для выполнения точной регулировки

Вы можете отрегулировать экспозицию вручную. Однако, когда Вы регулируете экспозицию вручную, функция BACK LIGHT не будет работать.

Using the FADER function

Использование фунции FADER

– CCD-TR511E/TR640E/TR840E/TR845E only

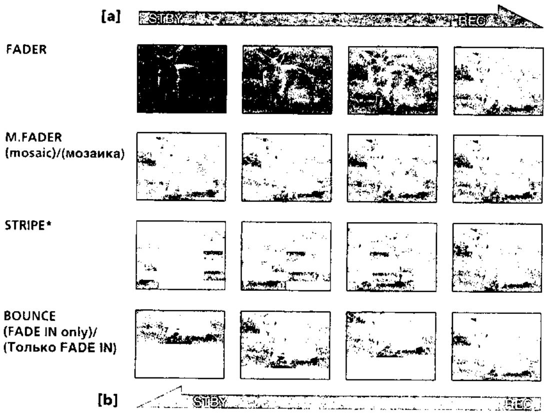
Selecting the fader function

You can fade in or out to give your recording a professional appearance.
When the picture fades in, the sound gradually increases. When the picture fades out, the sound gradually decreases.

– Только CCD-TR511E/TR640E/TR840E/TR845E

Выбор функции введения/выведения изображения

Вы можете плавно вводить или выводить изображение, придавая Вашей записи профессиональный вид.
Если изображение постепенно вводится, звук постепенно увеличивается. Если изображение постепенно выводится, звук постепенно уменьшается.



MONOTONE
When fading in, the picture gradually changes from black and white to colour.
When fading out, the picture gradually changes from colour to black and white.

MONOTONE
При введении изображение постепенно изменяется от черно-белого до цветного.
При выведении изображение постепенно изменяется от цветного до черно-белого.

* This function is CCD-TR840E/TR845E only.

* Данная функция имеется только у CCD-TR840E/TR845E.

Using the fader function

When fading in [a]

(1) While the camcorder is in Standby mode, press FADER until the desired fade indicator flashes.
(2) Press START/STOP to start recording. The fade indicator stops flashing.

When fading out [b]

(1) During recording, press FADER until the desired fade indicator flashes.
(2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.

The fading mode selected last is indicated first of all.

Использование функции введения/выведения изображения

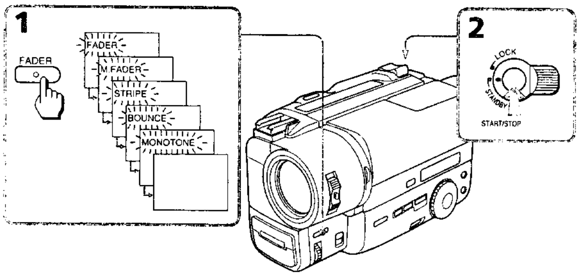
Для введения изображения [a]

(1) Когда видеокамера находится в режиме готовности нажимайте FADER до тех пор, пока желаемый индикатор введения/выведения не начнет мигать.
(2) Нажмите START/STOP для начала записи. Индикатор введения/выведения перестает мигать.

Для выведения изображения [b]

(1) Во время записи нажимайте FADER до тех пор, пока желаемый индикатор введения/выведения не начнет мигать.
(2) Нажмите START/STOP для остановки записи. Индикатор введения/выведения перестает мигать и запись останавливается.

Режим введения/выведения, который был выбран последним, указывается прежде всего.



Note on the bounce function
When you use the following functions, "BOUNCE" indicator does not appear.
- Wide mode
- Functions using the PICTURE EFFECT button
- Functions using the PROGRAM AE dial
- D ZOOM is set to ON in the menu system

Примечание относительно функции перехода
Если Вы используете следующие функции, индикатор "BOUNCE" не появится.
- Широкоформатный режим
- Функции с использованием кнопки PICTURE EFFECT
- Функции с использованием диска PROGRAM AE
- Функция D ZOOM установлена на ON в системе меню

To cancel the fader function
Before pressing START/STOP, press FADER until the indicator disappears.

When the date or time indicator and title are displayed
The date or time indicator and title do not fade in or fade out.

When the START/STOP MODE switch is set to 5SEC or ⊥
You cannot use the fader function.

Note on the fader function
While using the bounce function, you cannot use the following functions.
- Exposure
- Focus
- Zoom

Для отмены функции введения/выведения изображения
Перед нажатием START/STOP нажимайте FADER до тех пор, пока индикатор не исчезнет.

Когда отображаются индикатор даты или времени и надпись
Индикатор даты или времени и надпись не вводятся и не выводятся вместе с изображением.

Когда переключатель START/STOP MODE установлен в положение 5SEC или ⊥
Вы не сможете использовать функцию введения/выведения изображения.

Примечания к функции введения/выведения изображения
Во время использования функции перехода Вы не можете использовать следующие функции.
- Экспозиция
- Фокусировка
- Трансфокация

Shooting in the dark (NightShot)

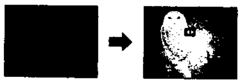
Съемка в темных условиях (ночная съемка)

– CCD-TR511E/TR640E/TR840E/TR845E only

The NightShot function enables you to shoot a subject in a dark place. You can achieve a satisfactory recording of the ecology of nocturnal animals for observation with this function.
This function may record picture nearly in monochrome.

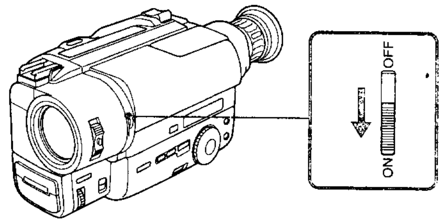
– Только CCD-TR511E/TR640E/TR840E/TR845E

Функция ночной съемки позволяет Вам производить съемку объекта в темном месте. Вы можете получить удовлетворительную запись жизни ночных животных при использовании данной функции. Данная функция может осуществлять запись изображения близкого к монохромному.



(1) While the camcorder is in Standby mode, slide NIGHTSHOT to ON.
(2) Press START/STOP to start recording. ◘ and "NIGHTSHOT" indicators flash.

(1) Когда видеокамера находится в режиме готовности передвиньте NIGHTSHOT в положение ON.
(2) Нажмите START/STOP для начала записи. Начнут мигать индикаторы ◘ и "NIGHTSHOT".



To cancel the NightShot function
Slide NIGHTSHOT to OFF.

Using the N.S.light
When you set N.S.LIGHT to ON in the menu system, the picture will be more clear.
The maximum limit of NightShot light is about 3m (about 10 feet).

Notes on the NightShot
- When you keep setting NIGHTSHOT to ON in normal recording, picture may be recorded in incorrect/unnatural colour.
- If focusing is difficult with the autofocus mode when using the NightShot function, use manual focus.

Для отмены функции ночной съемки
Передвиньте NIGHTSHOT в положение OFF.

Использование освещения N.S.
Когда функция N.S. LIGHT установлена на ON в системе меню, изображение будет более четким.
Максимальный предел для ночной съемки составляет около 3 метров.

Примечания к ночной съемке
- Когда Вы оставляете NIGHTSHOT в положении ON при нормальной записи, изображение может быть записано в неправильном/неестественном цвете.
- Если фокусировка в автоматическом режиме при использовании функции ночной съемки затруднена, выполните фокусировку вручную.

Using the wide mode function

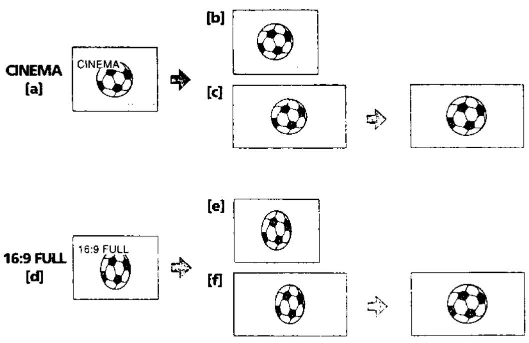
Использование функции широкоформатного режима

Selecting the desired mode

You can record a cinemalike picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 FULL).

Выбор желаемого режима

Вы можете записывать изображение как в кинотеатре (CINEMA) или широкоформатное изображение 16:9 для просмотра на широкоэкранном телевизоре 16:9 (16:9 FULL).



CINEMA
Black bands appear at the top and the bottom of the screen, and the viewfinder **[a]** and a normal TV screen **[b]** look wide. You can also watch the picture without black bands on a wide-screen TV **[c]**.

16:9 FULL
The picture in the viewfinder **[d]** or on a normal TV **[e]** is horizontally compressed. You can watch the picture of normal images on a wide-screen TV **[f]**.

CINEMA
Черные полосы появляются сверху и снизу экрана, и видоискатель **[a]** и нормальный экран телевизора выглядят широкими **[b]**. Вы также можете просмотреть изображение без черных полос на широкоэкранном телевизоре **[c]**.

16:9 FULL
Изображение в видоискателе **[d]** или на обычном телевизоре **[e]** сжато по горизонтали. Вы можете просмотреть нормальное изображение на широкоэкранном телевизоре **[f]**.

Using the wide mode function

You can select the wide mode (OFF, CINEMA, 16:9FULL) in the menu system (p. 34).

To cancel wide mode

Select OFF in the menu system.

To watch the tape recorded in wide mode

To watch the tape recorded in CINEMA mode, set the screen mode of the wide-screen TV to zoom mode. To watch the tape recorded in 16:9 FULL mode, set it to full mode. For details, refer to the operating instruction of your TV.
Note that the picture recorded in 16:9 FULL mode looks compressed on a normal TV.

Notes on wide mode
- If wide mode is set to 16:9FULL, the Steady Shot function does not work and the ♉ indicator flashes (CCD-TR640E/TR840E/TR845E only).
- In wide mode, you cannot select the bounce function with FADER (CCD-TR511E/TR640E/TR840E/TR845E only).
- When you record in 16:9 FULL mode, the date or time indicator will be widened on the wide-screen TV.
- If you dub a tape, the tape is copied in the same mode as the original recording.
- The wide mode is cancelled automatically 5 minutes after you remove the power source.
- When recording, you cannot change the mode.

Использование функции широкоформатного режима

Вы можете выбрать широкоформатный режим (OFF, CINEMA, 16:9FULL) в системе меню (стр. 34).

Для отмены режима

Выберите OFF в системе меню.

Для просмотра ленты, записанной в широкоформатном режиме

Для просмотра ленты записанной в режиме CINEMA установите режим экрана на широкоэкранного телевизора на режим масштабирования. Для просмотра ленты записанной в режиме 16:9 FULL установите его на полноэкранный режим. Подробности смотрите в инструкции по эксплуатации Вашего телевизора.
Заметьте, что изображение, записанное в режиме 16:9 FULL , выглядит сжатым на обычном телевизоре.

Примечания к широкоформатному режиму
- Если широкоформатный режим установлен на 16:9 FULL, то функция устойчивой съемки работать не будет, а индикатор ♉ будет мигать (только CCD-TR640E/TR840E/TR845E).
- В широкоформатном режиме Вы не можете выбрать функцию перехода с помощью FADER (только CCD-TR511E/TR640E/TR840E/TR845E).
- При записи в режиме 16:9 FULL индикатор даты или времени будет расширенным на широкоэкранном телевизоре.
- Если Вы осуществляете перезапись ленты, то лента будет записываться в таком режиме, как и исходная лента.
- Широкоформатный режим будет автоматически отменен через 5 минут после снятия источника питания.
- Во время записи Вы не можете изменить режим.

Using the PROGRAM AE function

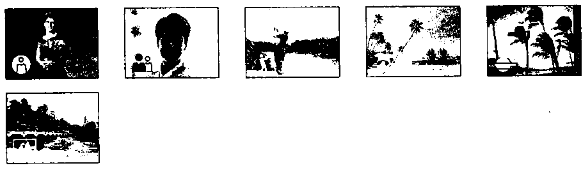
Использование функции PROGRAM AE

Selecting the best mode

You can select one of six PROGRAM AE (Auto Exposure) modes to suit your shooting situation, referring to the following.

Выбор наилучшего режима

Вы можете выбрать из шести режимов PROGRAM AE (автоматической экспозиции), который подходит для съемки в Вашей ситуации, сверяясь со следующими описаниями.



● Spotlight mode
For subjects in spotlight, such as at the theatre or a formal event.

Soft Portrait mode
For zooming in on a still subject in telephoto mode, or for a subject behind an obstacle such as a screen. Creates a soft background for subjects such as people or flowers, and faithfully reproduces skin colour.

Sports Lesson mode
For recording fast-moving subjects such as in tennis or golf games.

Beach & Ski mode
For people or faces in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

Sunset & Moon mode
For recording subjects in dark environments such as sunsets, fireworks, neon signs, or general night views.

Landscape mode
For distant subjects such as mountains or when recording a subject behind an obstacle such as a window or screen.

Режим прожекторного освещения
Для записи объекта под прожекторным освещением, как например, в театре или на официальном приеме.

Мягкий портретный режим
Для выполнения наезда видеокамеры на неподвижный объект в режиме телефото или для записки объекта, находящегося за преградой, например, за сеткой. Создает мягкий фон для таких объектов, как люди или цветы, и четко воспроизводит телесный цвет.

Режим спортивных занятий
Для съемки быстродвигающихся объектов, как например, в играх в теннис или гольф.

Пляжный и лыжный режим
Для записи людей или лиц, находящихся под сильным освещением или отраженным светом, как например, на пляже летом или на снежном склоне.

Режим захода солнца и луны
Для записи объектов в темных условиях, как например, заход солнца, фейерверки, неоновые рекламы или общие ночные пейзажи.

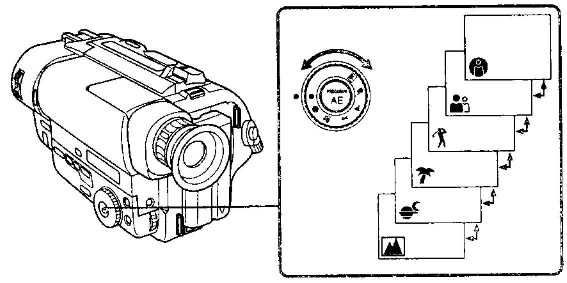
Ландшафтный режим
Для записи удаленных объектов, таких как горы, или при записи объекта за преградой, как например, за окном или сеткой.

Using the PROGRAM AE function

Turn the PROGRAM AE dial to select the desired PROGRAM AE mode.

Использование функции PROGRAM AE

Поверните диск PROGRAM AE для выбора желаемого режима PROGRAM AE.



To turn off program AE

Set the PROGRAM AE dial to the ● position.

Notes on focus setting
- In the Spotlight, Sports lesson and Beach & Ski modes, you cannot take close-ups because the camcorder is set to focus only on subjects in the middle to far distance.
- In the Sunset & Moon and Landscape modes, the camcorder is set to focus only on distant subjects.

Для выключенния функции программы AE

Устновите диск PROGRA AE в положение ●.

Примечания к установке фокусировки
- В режимах прожекторного освещения, спортивных занятий, а также пляжном и лыжном режиме Вы не можете снимать крупным планом, так как видеокамера фокусируется только на объекты среднего и дальнего удаления.
- В режимах захода солнца и луны и ландшафтном видеокамера фокусируется только на удаленные объекты.

Focusing manually

Ручная фокусировка

– CCD-TR511E/TR640E/TR840E/TR845E only

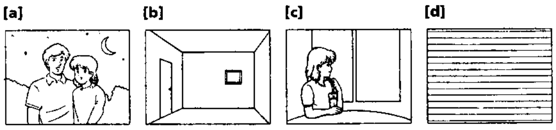
When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.

– Только CCD-TR511E/TR640E/TR840E/TR845E

Когда использовать ручную фокусировку

В следующих случаях Вы можете получить лучшие результаты, отрегулировав фокусировку вручную.



- Insufficient light **[a]**
- Subjects with little contrast - walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

- Недостаточное освещение **[a]**
- Объекты с малым контрастом - стены, небо и т.д. **[b]**
- Слишком яркий фон за объектом **[c]**
- Горизонтальные полосы **[d]**
- Съемка объектов через матированное стекло
- Объекты за сеткой и т.д.
- Яркий объект или объект, отражающий свет
- Съемка неподвижного объекта с использованием треноги

Focusing manually

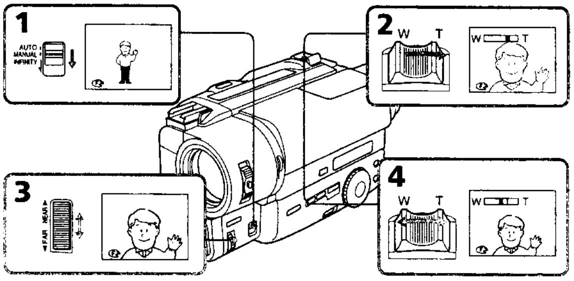
When focusing manually, first focus in telephoto before recording, and then reset the shot length.

(1) Set FOCUS to MANUAL. The Ⓕ indicator appears in the viewfinder.
(2) Move the power zoom lever to the "T" side in the optical zoom zone until the lever reaches the end.
(3) Turn the NEAR/FAR dial to achieve a sharp focus.
(4) Set the desired shot length using the power zoom lever.

Ручная фокусировка

При ручной фокусировке сперва выполняйте фокусировку в режиме телефото перед записью, а затем установите расстояние съемки.

(1) Установите FOCUS на MANUAL. Индикатор Ⓕ появляется в видоискателе.
(2) Перемещайте рычаг приводного трансфокатора в сторону "T" по оптической зоне трансфокации до тех пор, пока рычаг не дойдет до конца.
(3) Поверните диск NEAR/FAR для получения четкой фокусировки.
(4) Установите желаемое расстояние съемки с использованием рычага приводного трансфокатора.



To return to autofocus mode
Set FOCUS to AUTO. The Ⓕ indicator in the viewfinder disappears.

Shooting in relatively dark places
Shoot at wide-angle after focusing in the telephoto position.

To record a very distant subject
Push FOCUS down to INFINITY. The lens focuses on the most distant subject while FOCUS is held down. When it is released, manual focus mode is resumed.
Use this function when shooting through a window or a screen, to focus on a most distant subject.

Note on manual focusing
The following indicators may appear:
▲ when recording a very distant subject.
♟ when the subject is too close to focus on.

Для возвращения к режиму автоматической фокусировки
Установите FOCUS на AUTO. Индикатор Ⓕ исчезнет из видоискателя.

Съемка в относительно темном месте
Производите съемку в положении широкого угла после выполнения фокусировки в положении телефото.

Для записи очень удаленного объекта
Нажать FOCUS вниз до INFINITY. Объектив фокусируется на наиболее удаленный объект, когда FOCUS удерживается в нажатом состоянии, После отпускания режим ручной фокусировки будет восстановлен.
Используйте эту функцию при съемке через окно или решетку для фокусировки на наиболее удаленные объекты.

Примечание к ручной фокусировке
Могут появляться следующие индикаторы
▲ При записи очень удаленного объекта.
♟ Когда объект находится слишком близко для фокусировки.

Enjoying picture effect

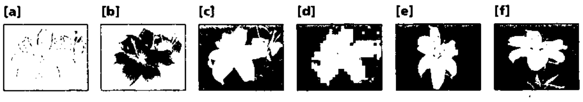
Наслаждение эффектами изображений

Selecting picture effect

You can make pictures like those of television with the Picture Effect function.

Выбор эффекта изображения

Вы можете сделать изображение похожим на те, что передают по телевидению с помощью функции эффектов изображения.



PASTEL [a]
The contrast of the picture is emphasized, and the picture looks like an animated cartoon.

NEG. ART [b]
The colour and brightness of the picture is reversed.

SEPIA
The picture is sepia.

B&W
The picture is monochrome (black and white).

SOLARIZE [c]
The light intensity is more clear, and the picture looks like an illustration.

MOSAIC [d]
The picture is mosaic.

SLIM [e]
The picture expands vertically.

STRETCH [f]
The picture expands horizontally.

PASTEL [a]
Контрастность изображения усиливается, и изображение выглядит, как мультипликация.

NEG. ART [b]
Цвет и яркость изображения будут негативными.

SEPIA
Изображение будет в цвете сепия.

B&W
Изображение будет монохроматическим (черно-белым).

SOLARIZE [c]
Интенсивность света будет более яркой, и изображение будет выглядеть, как иллюстрация.

MOSAIC [d]
Изображение будет мозаичным.

SLIM [e]
Изображение расширяется по вертикали.

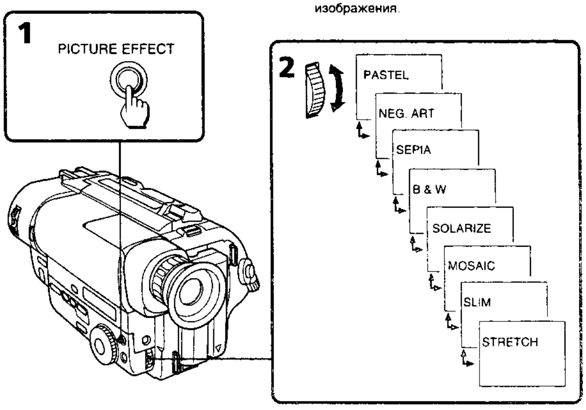
STRETCH [f]
Изображение расширяется по горизонтали.

Using picture effect function

(1) Press PICTURE EFFECT.
(2) Turn the control dial to select the desired picture effect mode.

Использование функции эффектов изображения

(1) Нажмите PICTURE EFFECT.
(2) Поверните регулировочный диск для выбора желаемого режима эффекта изображения.



To turn off picture effect
Press PICTURE EFFECT. The indicator in the viewfinder goes out.

Note on the picture effect
When you turn the power off, the camcorder returns automatically to normal mode.

Выключение эффекта изображения
Нажмите PICTURE EFFECT. Индикатор эффекта изображения исчезнет из видоискателя.

Примечание к эффектам изображения
Когда Вы выключаете питание, видеокамера автоматически возвращается к нормальному режиму.

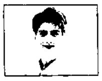
Adjusting the exposure

– CCD-TR511E/TR640E/TR840E/TR845E only

When to adjust the exposure

Adjust the exposure manually under the following cases.

[a]



[a]
- The background is too bright (back lighting)
- Insufficient light: most of the picture is dark

[b]
- Bright subject and dark background
- To record the darkness faithfully

Adjusting the exposure

(1) Press EXPOSURE.
(2) Turn the control dial to adjust the brightness.

Регулировка экспозиции

– Только CCD-TR511E/TR640E/TR840E/TR845E

Когда требуется регулировать экспозицию

Отрегулируйте экспозицию вручную в следующих случаях.

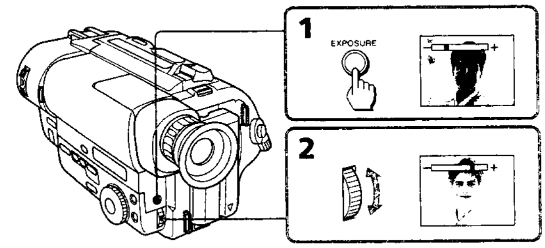
[b]

[a]
- Фон является слишком ярким (задняя подсветка)
- Недостаточное освещение: большая часть изображения темная

[b]
- Яркий предмет на темном фоне
- Для хорошей записи в темноте

Регулировка экспозиции

(1) Нажмите EXPOSURE.
(2) Поверните регулировочный диск для регулировки яркости.



To return to automatic exposure mode
Press EXPOSURE again.

Для возврата к режиму автоматической экспозиции
Снова нажмите EXPOSURE.

Shooting with the sun behind you
If the light source is behind your subject, or in the following situations, the subject will be recorded too dark.
- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shooting in the dark
We recommend you to use a video light (not supplied). To get the best colour, you must maintain a sufficient light level.

When you adjust the exposure manually
- BACK LIGHT does not work.
- If you change the setting of PROGRAM AE mode, the camcorder automatically returns to automatic exposure mode.

Съемка, когда солнце находится у Вас за спиной
Если источник освещения находится у Вас за спиной или в следующих условиях, объект будет записан слишком темным.
- Объект внутри помещения и окно находится за объектом.
- Источники яркого освещения попадают в кадр.
- Когда снимаемается человек, носящий белую или блестящую одежду, на белом фоне, лицо может стать темным.

Съемка в темных условиях
Мы рекомендуем Вам использовать видеофонарь (не прилагается). Для получения наилучшего цвета Вы должны поддерживать достаточный уровень освещения.

Когда Вы регулируете экспозицию вручную
- Функция BACK LIGHT не работает.
- Если Вы изменяете установку режима PROGRAM AE, видеокамера автоматически возвращается к режиму автоматической экспозиции.

Superimposing a title

You can select one of eight preset titles and two custom titles. You can also select the language, colour, size and position of titles.

Superimposing titles

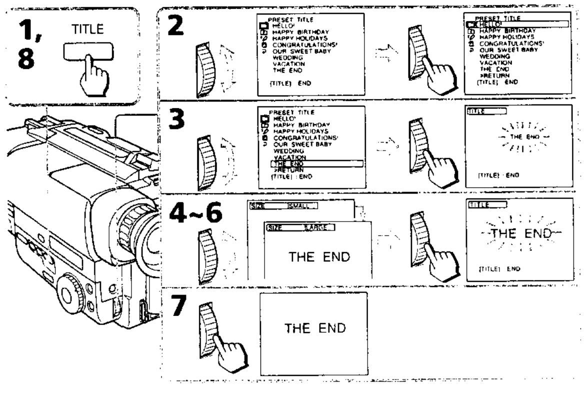
(1) Press TITLE to display the title menu.
(2) Turn the control dial to select 🗀 , then press the dial.
(3) Turn the control dial to select the desired title, then press the dial. The titles are displayed in the language you selected.
(4) Turn the control dial to select the colour, size, or position, then press the dial.
(5) Turn the control dial to select the desired item, then press the dial.
(6) Repeat step 4 and 5 until the title is arranged as desired.
(7) Press control dial again to complete the setting.
(8) When you want to stop recording the title, press TITLE.

Наложение надписи

Вы можете выбирать из восьми предварительно установленных надписей и двух совбственных надписей. Вы можете также выбирать язык, цвет, размер и положение надписей.

Наложение надписей

(1) Нажмите TITLE для отображения меню надписей .
(2) Поверните регулировочный диск для выбра 🗀, а затем нажмите диск.
(3) Поверните регулировочный диск для выбора надписи, а затем нажмите регулировочный диск. Надпись отображается на выбранном Вами языке.
(4) Поверните регулировочный диск для выбора цвета, размера или положения, а затем нажмите регулировочный диск.
(5) Поверните регулировочный диск для выбора желаемого элемента, а затем нажмите регулировочный диск.
(6) Повторяйте пункты 4 и 5 до тех пор, пока не отрегулируете надпись по своему желанию.
(7) Нажмите регулировочный диск снова для завершения установки.
(8) Когда Вы захотите закончить запись надписи, нажмите TITLE.



To superimpose the title from beginning
After step 7, press START/STOP to start recording.

To superimpose the title while you are recording
After pressing START/STOP to start recording, start from step 1. In this case, beep is not heard.

To select the language of preset title
When you want to select the language, select ◘ before step 2. Then select language and return to step 2.

To use the custom title
When you want to use the custom title, select ⊡ in step 2.

Notes on superimposing a title
- If you have not given any custom title, "– – – – ..." appears on the display.
- The FADER function works while the title is displayed, however, the title does not fade (CCD-TR511E/TR640E/TR840E/TR845E only).
- If you display the menu or title menu while superimposing a title, the title is not recorded while the menu or title menu is being displayed.

Title colour changes as follows :
WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE

Title size changes as follows :
SMALL ←→ LARGE

Title position changes as follows :
When you select the title size "SMALL", you can choose 9 positions. When you select the title size "LARGE" you can choose 8 positions.

Notes on the title
- Depending on size or position of the title, both of date and time or either of them is not displayed.
- If you input 13 characters or more for a LARGE title, the title is automatically reduced into a proper size after the position is set.

Для наложения надписи от начала
После пункта 7 нажмите START/STOP для начала записи.

Для наложения надписи в процессе записи
После нажатия START/STOP для начала записи начните с пункта 1. В этом случае зуммерный сигнал подаваться не будет.

Для выбора языка предварительно установленной надписи
Если Вы хотите выбрать язык, выберите◘ перед пунктом 2. Затем выберите язык и вернитесь к пункту 2.

Для выбора собственной надписи
Если Вы хотите использовать собственную надпись, выберите ⊡ в пункте 2.

Примечания к наложению надписи
- Если Вы не дали надписи никакого названия, на дисплее появится индикация "– – – – ...".
- Функция FADER во время отображения названия работает, однако название плавно не вводится и не выводится (только CCD-TR511E/TR640E/TR840E/TR845E).
- Если Вы отобразите дисплей меню или меню надписей во время наложения надписи, то надпись не будет записываться во время отображения дисплея меню или меню надписей.

Цвет надписей изменяется следующим образом:
WHITE ←→ YELLOW ←→ VIOLET ←→ RED ←→ CYAN ←→ GREEN ←→ BLUE

Размер надписей изменяется следующим образом:
SMALL ←→ LARGE

Положение надписи изменяется следующим образом:
Если Вы выбираете размер надписи "SMALL", то Вы можете выбирать одно из 9 положений. Когда Вы выбираете размер надписи "LARGE", Вы может выбирать из 8 положений.

Примечания к надписям
- В зависимости от размера или положения названия дата и время или же что-то одно из них не отображается.
- Если Вы ввели 13 знаков или более для размера надписи LARGE, надпись автоматически уменьшается до надлежащего размера после выбора положения.

Making your own titles

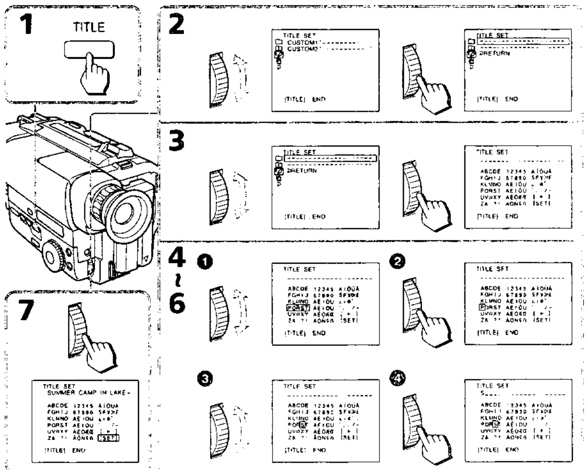
You can make up to two titles and store them in the camcorder. We recommend to set the POWER switch to PLAYER or eject the cassette before you begin.
Your title can have up to 20 characters.

(1) Press TITLE to display the title menu.
(2) Turn the control dial to select 𝒯⁄, then press the dial.
(3) Turn the control dial to select the first line (CUSTOM1) or second line (CUSTOM2), then press the dial.
(4) Turn the control dial to select the column of the desired character, then press the dial.
(5) Turn the control dial to select the desired character, then press the dial.
(6) Repeat step 4 and 5 until you finish the title.
(7) For finishing the titling work, turn the control dial to select SET, then press the dial.

Создание Ваших собственных надписей

Вы можете создать две надписи и сохранить их в памяти видеокамеры. Мы рекомендуем установить выключатель POWER в положение PLAYER или вытолкнуть кассету перед началом.
Ваша надпись может иметь до 20 знаков.

(1) Нажмите TITLE для отображения меню надписей.
(2) Поверните регулировочный диск для выбара 𝒯⁄, а затем нажмите диск.
(3) Поверните регулировочный диск для выбора первой линии строки (CUSTOM1) или второй линии строки (CUSTOM2), а затем нажмите диск.
(4) Поверните регулировочный диск для выбора колонки с желаемым знаком, а затем нажмите диск.
(5) Поверните регулировочный диск для выбора желаемого знака, а затем нажмите регулировочный диск.
(6) Повторяйте пункты 4 и 5 до тех пор, пока не закончите надпись.
(7) Для окончания работы по созданию надписи поверните регулировочный диск для выбора SET, а затем нажмите диск.



Making your own titles

Создание Ваших собственных надписей

To edit a title you have stored

In step 3, select CUSTOM1 or CUSTOM2, depending on which title you want to edit, then change the title.

Note
You can not enter over 20 characters title.

If you take 5 minutes or longer to enter characters while a cassette is in the camcorder
The power goes off automatically. Characters you have entered remain. Turn STANDBY down once and then up again, then proceed from step 1.

To delete a title

In step 4, turn the control dial to select [←] then press the dial. The last character is erased. Repeat this step until all characters are deleted. Do not erase the title by selecting empty spaces. If you do so, a title full of empty spaces is stored.

Для редактирования запомненной надписи

В пункте 3 выберите CUSTOM1 или CUSTOM2 в зависимости от того, какую надпись Вы хотите отредактировать, а затем измените надпись.

Примечание
Вы не можете ввести больше, чем 20 знаков.

Если проходит 5 минут или более при вводе знаков в то время, когда кассета находится в видеокамере
Питание выключится автоматически. Знаки, которые Вы ввели, остаются в памяти. Поверните STANDBY один раз вниз, а затем снова вверх и начните с пункта 1.

Для отмены надписи

В пункте 4 поверните диск управления, чтобы выбрать [←], затем нажмите диск. Последний знак будет стерт. Повторяйте это действие до тех пор, пока не будут удалены все знаки. Не стирайте надпись путем выбора пробелов. Если Вы так сделаете, то будет запомнена надпись, состоящая из одних пробелов.

Re-recording a picture in the middle of a recorded tape

– CCD-TR845E only

You can insert a scene in the middle of a recorded tape by setting the starting and ending points. The previous recorded portion will be erased. When the RC time code appears, set COUNTER to NORMAL in the menu system to display the tape counter.

Перезапись изображения в середине записанной ленты

– Только CCD-TR845E

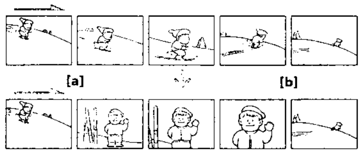
Вы можете вставить сцену в середине записанной ленты, установив начальную и конечную точки. Ранее записанная часть будет стерта. Когда появляется временной код RC, установите COUNTER на NORMAL в системе меню для отображения счетчика ленты.

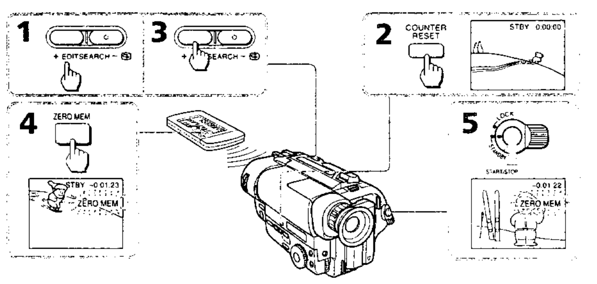
Re-recording a picture in the middle of a recorded tape

(1) While the camcorder is in Standby mode, keep pressing the + (forward playback) or – (reverse playback) side of EDITSEARCH, and release the button where you want to end the insertion **[b]**. The camcorder enters Standby mode again.
(2) Press COUNTER RESET. The counter resets to zero.
(3) Keep pressing the – side of EDITSEARCH and release the button at the point where you want to start the insertion **[a]**.
(4) Press ZERO MEM on the Remote Commander. The ZERO MEM indicator flashes.
(5) Press START/STOP to start recording. The recording stops automatically at the counter zero point.

Перезапись изображения в середине записанной ленты

(1) Когда видеокамера находится в режиме готовности, держите нажатой сторону + (воспроизведение вперед) или сторону – (обратное воспроизведение) кнопки EDITSEARCH и отпустите кнопку в точке, где Вы хотите закончить вставку **[b]**. Видеокамера снова войдет в режим готовности.
(2) Нажмите COUNTER RESET. Счетчик сбрасывается на нуль.
(3) Держите нажатой сторону – кнопки EDITSEARCH и отпустите кнопку в точке, где Вы хотите начать вставку **[a]**.
(4) Нажмите ZERO MEM на пульте дистанционного управления. Индикатор ZERO MEM будет мигать.
(5) Нажмите START/STOP для начала записи. Запись остановится автоматически в нулевой точке счетчика.





To change the end point

Press ZERO MEM to erase the ZERO MEM indicator, then repeat steps 2 to 5.

Для изменения конечной точки

Нажмите ZERO MEM для стирания индикатора ZERO MEM, а затем повторите пункты со 2 по 5.

Re-recording a picture in the middle of a recorded tape

Перезапись изображения в середине записанной ленты

Notes on re-recording

- The picture and the sound may be distorted at the end of the inserted portion when it is played back.
- If you re-record on the portion which contains non-recorded section, the zero memory function may not work correctly.
- When the START/STOP MODE switch is set to 5SEC or ⊥, you cannot use the zero memory function.

Примечания к перезаписи

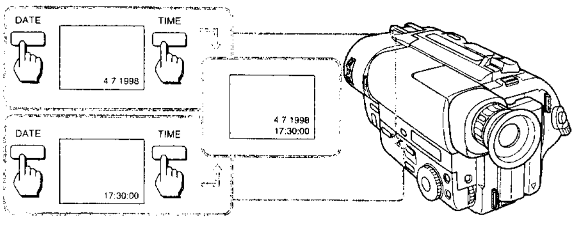
- Изображение и звук могут быть искажены в конце вставленной части при ее воспроизведении.
- Если Вы перезаписываете часть ленты, которая содержит незаписанные участки, то функция запоминания нуля может работать неправильно.
- Когда переключатель START/STOP MODE установлен в положение 5SEC или ⊥, Вы не можете использовать функцию запоминания нуля.

Recording with the date/time

Before you start recording or during recording, press DATE or TIME. You can record the date or time displayed in the viewfinder with the picture. Press DATE (or TIME), then press TIME (or DATE) to display the date and time together. The clock is already set at the factory, to London time for United Kingdom and to Paris time for the other European countries. You can reset the clock in the menu system.

Запись с датой/временем

Перед началом записи нажмите DATE или TIME. Вы можете записывать дату или время, отображаемые в видоискателе вместе с изображением. Нажмите DATE (или TIME), а затем нажмите TIME (или DATE) для отображения даты и времени одновременно. Часы установлены на заводе на пондоское время для моделей Соединенного Королевства и на парижское время для моделей других европейских стран. Вы можете заново установить часы в системе меню.



To stop recording with the date and/or time

Press DATE and/or TIME again. The date and/or time indicator disappears. The recording continues.

Для останова записи с датой и/или временем

Нажмите DATE и/или TIME снова. Индикатор даты и/или времени исчезнет. Запись будет продолжена.

Optimizing the recording condition

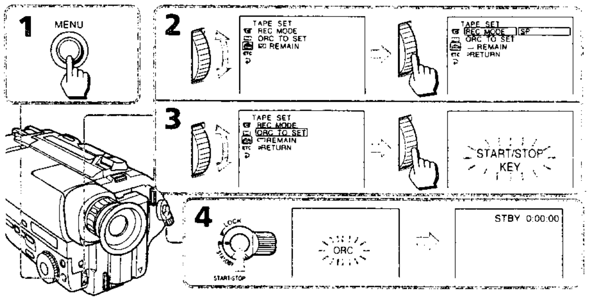
Оптимизация состояния записи

Use this feature to check the tape condition before recording, so that you can get the best possible picture (ORC).

(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select 📼, then press the dial.
(3) Turn the control dial to select ORC TO SET, then press the dial.
"START/STOP KEY" flashes.
(4) Press START/STOP.
The camcorder takes about 5 seconds to check the tape condition and then returns to Standby mode.

Используйте данную функцию для проверки состояния ленты перед записью, так, чтобы Вы могли получить наилучшее по возможности изображение (ORC).

(1) Когда видеокамера будет находится в режиме готовности, нажмите MENU для отображения меню.
(2) Нажмите регулировочный диск для выбора 📼, а затем нажмите диск.
(3) Поверните регулировочный диск для выбора ORC TO SET, а затем нажмите диск.
"START/STOP KEY" будет мигать.
(4) Нажмите START/STOP.
Видеокамере требуется около 5 секунд для проверки состояния ленты, а затем она возвращается в режим готовности.



Each time you insert the cassette

Perform the above procedures.

Notes on the ORC function

- When you set ORC TO SET, the recording on the tape is erased for about 0.1 second so that the camcorder can check the tape condition. Be careful when you use a recorded tape. The 0.1 second blank is erased if you record from the point where you set ORC TO SET for more than 2 seconds, or if you record over the blank.
- You cannot use this function on a tape with the red mark on the cassette exposed.

Каждый раз, когда Вы вставляете кассету

Выполняйте вышеописанную процедуру.

Примечания к функции ORC

- Когда Вы устанавливаете ORC TO SET, запись ленты стирается на 0,1 секунды, так, чтобы видеокамера смогла проверить состояние ленты. Будьте осторожны, когда Вы используете записанную ленту. 0,1-секундный пробел исчезает, если Вы начинаете запись от точки, где Вы установили ORC TO SET более, чем на 2 секунды, или если производите запись поверх незаписанной части.
- Вы не можете использовать данную функцию с лентой, если на кассете вставлена красная метка.

Releasing the STEADYSHOT function

Отключение функции STEADYSHOT

– CCD-TR640E/TR840E/TR845E only

When the Steady Shot function is working, the camcorder compensates for camera-shake.

You can release the Steady Shot function when you do not need to use the Steady Shot function. The 🎥 indicator lights up when you release the Steady Shot function. Do not use the Steady Shot function when shooting a stationary object with a tripod.
You can select ON or OFF in the menu system (p. 34).

To activate the Steady Shot function again

Set STEADYSHOT to ON in the menu system.

Notes on the Steady Shot function

- The Steady Shot function will not correct excessive camera-shake.
- When you set the STEADYSHOT function on or off in the menu system, the exposure may fluctuate.
- Steady Shot does not operate in 16:9 FULL mode. If you set STEADYSHOT to ON in the menu system, the ↻ indicator flashes.

– Только CCD-TR640E/TR840E/TR845E

Когда работает функция устойчивой съемки, видеокамера осуществляет компенсацию дрожания видеокамеры.

Вы можете отключить функцию устойчивой съемки, когда Вы не нуждаетесь в использовании функции устойчивой съемки. Индикатор 🎥 высветится, когда Вы отключите функцию устойчивой съемки. Не используйте функцию устойчивой съемки при съемке неподвижных объектов с помощью треноги.
Вы можете выбирать ON или OFF в системе меню (стр. 34).

Для активизации функции устойчивой съемки снова

Установите STEADYSHOT на ON в системе меню.

Примечания к функции устойчивой съемки

- Функция устойчивой съемки не откорректирует чрезмерного дрожания видеокамеры.
- При включении и выключении функции STEADYSHOT в системе меню экспозиция может колебаться.
- Функция устойчивой съемки не работает в режиме 16:9 FULL. Если Вы установите STEADYSHOT на ON в системе меню. индикатор ↻ будет мигать.

Searching the boundaries of recorded date

Поиск границ записанных дат

– CCD-TR845E only

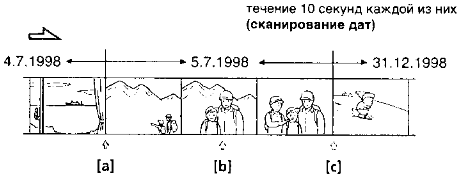
You can search for the boundary between recording dates using the Data Code automatically recorded on the tape.
There are two modes:

- Searching for the beginning of a specific date, and playing back from there **(Date Search)**
- Searching for the beginning of all days, one after another, playing back about 10 seconds of each **(Date Scan)**

– Только CCD-TR845E

Вы можете осуществлять поиск границ между записанными датами с использованием кода данных, автоматически записываемого на ленте.
Существует два режима:

- Поиск начала определенной даты с воспроизведением с того места **(поиск даты)**
- Поиск начала всех дат, одной за другой, с воспроизведением приблизительно в течение 10 секунд каждой из них **(сканирование дат)**



Each time you press DATE, the mode changes as follows:

Date Search → Date Scan → nothing

We recommend you to connect the camcorder to your TV or VCR to view the picture on the TV screen. If the viewfinder indicators do not appear on the TV screen during operation, press DISPLAY on the Remote Commander.

To search for the beginning of a specific date

(1) Set the POWER switch to PLAYER.
The video control buttons light up.
(2) Press DATE on the Remote Commander.
(3) When the current position is **[b]**, press ◀◀ to search towards **[a]** or press ▶▶ to search towards **[c]**.

Каждый раз, когда Вы нажимаете DATE, режим изменяется следующим образом:

Поиск даты → Сканирование дат → Выкл.

Мы рекомендуем Вам подсоединить видеокамеру к Вашему телевизору или КВМ для просмотра изображения на экране телевизора. Если индикаторы видоискателя не появляются на экране телевизора во время работы, нажмите кнопку DISPLAY на пульте дистанционного управления.

Для поиска начала определенной даты

(1) Установите выключатель POWER в положение PLAYER. Высветятся кнопки видеоконтроля.
(2) Нажмите DATE на пульте дистанционного управления.
(3) Если текущее положение – **[b]**, нажмите ◀◀ для поиска в направлении **[a]** или нажмите ▶▶ для поиска в направлении **[c]**.

Searching the boundaries of recorded date

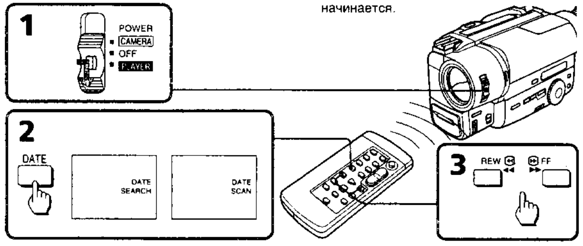
Поиск границ записанных дат

To scan the beginning of all days

(1) Set the POWER switch to PLAYER.
(2) Press DATE on the Remote Commander twice.
(3) Press ◀◀ or ▶▶. Date Scan starts.

Для сканирования начала всех дат

(1) Установите выключатель POWER в положение PLAYER.
(2) Дважды нажмите DATE на пульте дистанционного управления.
(3) Нажмите ◀◀ или ▶▶. Сканирование дат начинается.



To stop searching or scanning

Press one of the following buttons: DATE , ▶, ■, ◀◀ or ▶▶.

To view pictures during searching or scanning

Press ▶ and then press ◀◀ or ▶▶.

If you do Date Search or Date Scan during playback

While the camcorder is looking for the date, a fast forward or rewind picture is displayed. Some noise is inevitable.

If you have erased or rewritten the index signal

The point at which the date changes may be out of position by about 10 seconds of playback.

Notes on Date Search and Date Scan mode

- If a day's recording is not longer than 2 minutes, the camcorder may not accurately find its boundaries.
- Date Search and Date Scan do not function on a tape recorded by a camcorder without the Data Code function.

Для останова поиска или сканирования

Нажмите одну из следующих кнопок: DATE, ▶, ■, ◀◀ или ▶▶.

Для просмотра изображения во время поиска или сканирования

Нажмите ▶, а затем нажмите ◀◀ или ▶▶.

Если Вы выполняете поиск даты или сканирование дат во время воспроизведения

Когда видеокамера осуществляет поиск даты, изображение ускоренной перемотки вперед или назад будет отображаться. Некоторые помехи будут при этом неизбежны.

Если Вы стираете или перезаписываете индексный сигнал

Точка; в которой происходит изменение даты, может изменить свое положение приблизительно на 10 секунд воспроизведения.

Примечания к режиму поиска даты и сканирования дат

- Если дневная запись продолжается не более 2-х минут, то видеокамера может точно не найти границу.
- Поиск даты и сканирование дат не функционируют на ленте, записанной на видеокамере без функции кода данных.

Returning to a pre-registered position

Возврат к предварительно зарегистрированной позиции

– CCD-TR845E only

Using the Remote Commander, you can easily go back to the desired point on a tape after playback. Use the tape counter. If the RC time code appears, set COUNTER to NORMAL in the menu system to display the tape counter.

We recommend you to connect the camcorder to your TV or VCR to view the picture on the TV screen. If the viewfinder indicators do not appear on the TV screen during operation, press DISPLAY on the Remote Commander.

(1) During playback, press COUNTER RESET at the point you later want to locate. The counter shows "0:00:00".

(2) Press ■ when you want to stop playback.

(3) Press ZERO MEM on the Remote Commander. The ZERO MEM indicator flashes.

(4) Press ◀◀ to rewind or press ▶▶ to fast-forward the tape to the counter's zero point. The tape stops automatically when the counter reaches approximately zero.

– Только CCD-TR845E

Используя пульт дистанционного управления, Вы можете легко вернуться к желаемой точке ленты после воспроизведения. Используйте счетчик ленты. Если появляется временной код RC, установите COUNTER на NORMAL в системе меню для отображения счетчика ленты.

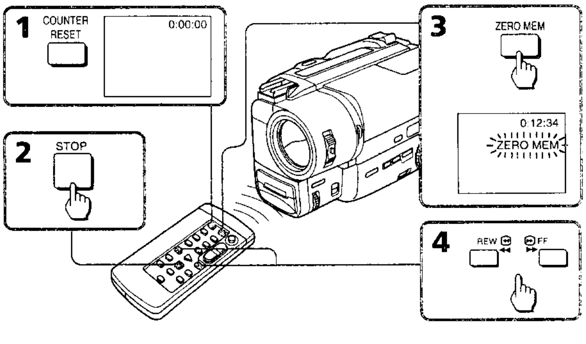
Мы рекомендуем Вам подсоединить видеокамеру к Вашему телевизору или KBM для просмотра изображения на экране телевизора. Если индикаторы видоискателя не появляются на экране телевизора во время работы, нажмите кнопку DISPLAY на пульте дистанционного управления.

(1) Во время воспроизведения нажмите COUNTER RESET в месте, которое Вы хотите потом обнаружить. Счетчик будет показывать "0:00:00".

(2) Нажмите ■, когда Вы захотите остановить воспроизведение.

(3) Нажмите ZERO MEM на пульте дистанционного управления. Индикатор ZERO MEM будет мигать.

(4) Нажмите ◀◀ для ускоренной перемотки ленты назад или ▶▶ для ускоренной перемотки ленты вперед до нулевой точки счетчика. Лента остановится автоматически, когда счетчик дойдет приблизительно до 0.



Returning to a pre-registered position

Возврат к предварительно зарегистрированной позиции

Notes on the tape counter

- Something must be recorded on the tape in order for the tape counter to function. Tape counter does not work on a blank tape.
- There may be a discrepancy of several seconds from the actual time.

Notes on ZERO MEM

- When you press ZERO MEM, the counter's zero point is memorized. Press ZERO MEM again before rewinding to cancel the memory.
- This function is cancelled automatically once the tape is rewound or advanced to the point you pre-registered.
- ZERO MEM does not function during recording or playing back.

Примечания к счетчику ленты

- Что-нибудь должно быть записано на ленте, чтобы счетчик ленты функционировал. Счетчик ленты не работает при незаписанной ленте.
- Может быть расхождение на несколько секунд с фактическим временем.

Примечания к ZERO MEM

- Когда Вы нажимаете ZERO MEM, нулевая точка счетчика запоминается. Перед перемоткой назад снова нажмите ZERO MEM для стирания памяти.
- Данная функция отменяется автоматически, когда лента перемотается назад или вперед до точки, которую Вы запомнили.
- ZERO MEM не функционирует во время записи или воспроизведения.

Locating the marking position

Нахождение отмеченной позиции

– CCD-TR845E only

You can locate the beginning of a desired programme easily by marking an index signal during recording or playback and searching for it later.

We recommend you to connect the camcorder to your TV or VCR to view the picture on the TV screen. If the viewfinder indicators do not appear on the TV screen during operation, press DISPLAY on the Remote Commander.

Marking an index signal

You can mark an index signal during recording or playback.

When marking at the beginning of recording or playback

Press INDEX MARK on the Remote Commander in recording standby or playback pause mode. The INDEX MARK indicator appears in the viewfinder with the MARK indicator flashing. When recording or playback starts, the MARK indicator stops flashing. This shows that the index signal is being marked. Then the INDEX MARK indicator will disappear.

– Только CCD-TR845E

Вы можете легко обнаружить начало желаемой программы путем записи индексного сигнала во время записи или воспроизведения и выполнения его поиска потом.

Мы рекомендуем Вам подсоединить видеокамеру к Вашему телевизору или KBM для просмотра изображения на экране телевизора. Если индикаторы видоискателя не появляются на экране телевизора во время работы, нажмите кнопку DISPLAY на пульте дистанционного управления.

Запись индексного сигнала

Вы можете записать индексный сигнал во время записи или воспроизведения.

При отметке в начале записи или воспроизведения

Нажмите INDEX MARK на пульте дистанционного управления в режиме готовности или паузы воспроизведения. Индикатор INDEX MARK появляется в видоискателе с мигающим индикатором MARK. Когда запись или воспроизведение начинается, индикатор MARK перестает мигать. Это показывает на то, что индексный сигнал записан. Затем индикатор INDEX MARK исчезает.

Locating the marking position

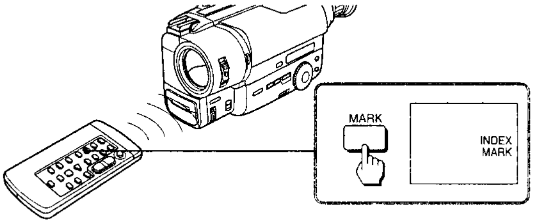
Нахождение отмеченной позиции

When marking during recording or playback

Press INDEX MARK on the Remote Commander at the point you want to locate later.

При отметке во время записи или воспроизведения

Нажмите INDEX MARK на пульте дистанционного управления в точке, которую Вы хотите потом обнаружить.



Notes on marking

- Make sure you mark index signals at more than two-minute intervals. Otherwise, you may not be able to search for them correctly.
- If you stop recording while the index signal is being marked (the INDEX MARK indicator lights in the viewfinder), the search may not be completed correctly.
- If you mark an index signal on the tape with the Data Code recorded, the Data Code will be erased at the point on which the index signal is marked. When playing back this tape, the camcorder keeps displaying the Data Code immediately before the erased one.
- A black band appears when you mark index signal during playback, and the sound cannot be heard. This does not affect the picture and sound that are already recorded.
- You cannot mark an index signal on a tape with the red mark on the cassette exposed.
- You cannot mark an index signal on an NTSC-recorded tape.
- You cannot mark the index signal during 5-second recording, recording only while pressing the START/STOP button, or during fade-out.

Примечания к записи индексного сигнала

- Вы должны обязательно записывать индексные сигналы с более, чем двухминутными интервалами. В противном случае Вы не сможете находить их правильно.
- Если Вы остановите запись во время записи индексного сигнала (индикатор INDEX MARK светится в видоискателе), поиск может быть выполнен неправильно.
- Если Вы записываете индексный сигнал на ленте с кодом данных, то код данных будет стерт в точке, в которой записан индексный сигнал. При воспроизведении такой ленты видеокамера отображает код данных непосредственно до того, который был стерт.
- Черная полоса появляется, когда Вы записываете индексный сигнал во время воспроизведения, и звук прослушиваться не будет. Это не влияет на звук и изображение которые уже записаны.
- Вы не можете записать индексный сигнал на ленте, если на кассете видна красная метка.
- Вы не можете записать индексный сигнал на ленте, записанной в системе NTSC.
- Вы не можете записать индексный сигнал во время 5-секундной записи, записи только во время удерживания кнопки START/STOP в нажатом состоянии или во время выведения изображения.

Locating the marking position

Нахождение отмеченной позиции

Scanning the beginning of each marking position – index scan

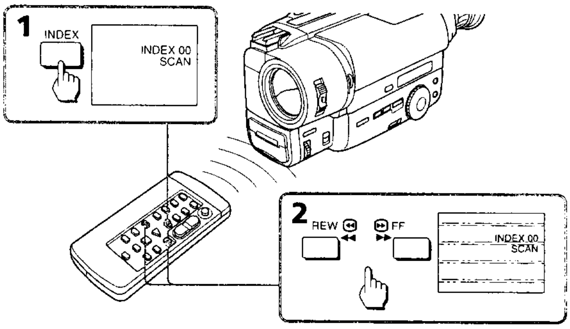
(1) Press INDEX on the Remote Commander during normal playback.

(2) Press ◀◀ or ▶▶. The tape rewinds or advances rapidly and plays back for approximately 10 seconds from the point on which the index signal was marked. If you want to continue playback, press ▶. When you do not press any button, the tape is automatically scanned to the next programme.

Сканирование начала каждой отмеченной позиции - индексное сканирование

(1) Нажмите INDEX на пульте дистанционного управления во время нормального воспроизведения.

(2) Нажмите ◀◀ или ▶▶. Лента ускоренно перематывается назад или вперед и воспроизводится приблизительно в течение 10 секунд от каждой точки, в которой был записан индексный сигнал. Если Вы хотите продолжить воспроизведение, нажмите ▶. Если Вы не нажимаете никакой кнопки, на ленте автоматически осуществляется поиск следующей программы.



To cancel index scan mode

Press ▶. Normal playback resumes.

Для отмены режима индексного сканирования

Нажмите ▶. Нормальное воспроизведение будет восстановлено.

Locating the desired marking position – index search

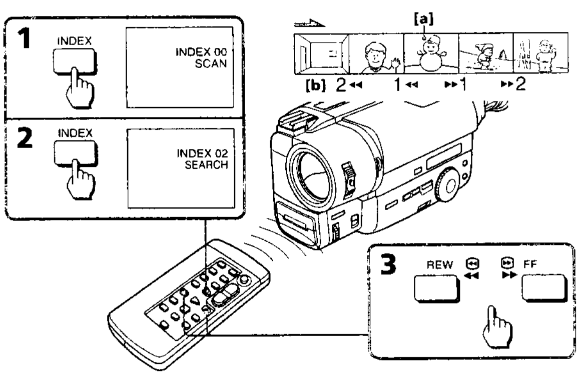
(1) Press INDEX on the Remote Commander during stop or playback mode.
(2) Press INDEX repeatedly until the index number of the desired programme is displayed in the viewfinder.
(3) Press ◀◀ or ▶▶. Playback starts from the beginning of the desired programme.

[a] the current position
[b] the INDEX number

Нахождение желаемой отмеченной позиции - Индексный поиск

(1) Нажмите INDEX на пульте дистанционного управления в режиме останова или воспроизведения.
(2) Неоднократно нажимайте INDEX до тех пор, пока индексный номер желаемой программы не отобразится в видоискателе.
(3) Нажмите ◀◀ или ▶▶. Воспроизведение начнется от начала желаемой программы.

[a] текущее положение
[b] индексный номер INDEX



To stop index search mode

Press ▶. Normal playback resumes.

Note on the index number

The index number (1, 2, etc.) indicates the distance from the point you are now viewing [a], regardless of the direction.

Для останова режима индексного поиска

Нажмите ▶. Нормальное воспроизведение будет восстановлено.

Примечание к индексному номеру.

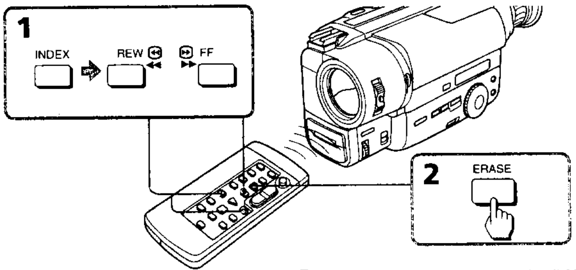
Индексный номер (1, 2 и т.д.) указывает расстояние от места, которое Вы просматриваете в текущий момент [a], независимо от направления.

Erasing an index signal

(1) Locate the index signal to be erased using the index scan or index search function.
(2) Press ERASE on the Remote Commander within 2 to 10 seconds while the desired programme plays back. After the index signal is erased, the camcorder returns to index scan when you used index scan in step 1. When you used index search, normal playback resumes.

Стирание индексного сигнала

(1) Найдите индексный сигнал подлежащий стиранию с использованием функции индексного сканирования или индексного поиска.
(2) Нажмите ERASE на пульте дистанционного управления в пределах от 2 до 10 секунд во время воспроизведения желаемой программы. После стирания индексного сигнала видеокамера возвращается к режиму индексного сканирования или индексного поиска, в зависимости от того, который из них был использован в пункте 1. После того, как Вы использовали индексный поиск, нормальное воспроизведение будет восстановлено.



Notes on erasing

- Press ERASE more than 2 seconds after the playback of the desired programme begins.
- You cannot erase the index signal on a tape with the red mark on the cassette exposed.
- While the index signal is being erased, the sound cannot be heard and a black band appears at the bottom of the picture. This will not affect the recorded sound or picture.
- The camcorder can detect index signals marked with VCRs, but may not erase them. VCRs with an index function can detect index signals marked with this camcorder but may not erase them.
- An index signal may be erased when making PCM after recording on another VCR in the portion where the index signal is marked.

Note on Data Code

When an index signal is erased, the Data Code on the same portion of the tape is also erased.

Примечания к стиранию индексного сигнала

- Нажмите ERASE более, чем на 2 секунды после начала воспроизведения желаемой программы.
- Вы не можете стереть индексный сигнал с ленты, если на кассете видна красная метка.
- Во время стирания индексного сигнала звук прослушиваться не может, и черная полоса появляется внизу изображения. Это не будет влиять на записанные звук или изображение.
- Видеокамера может детектировать индексные сигналы, записанные на КВМ, но не может их стереть. КВМ с индексной функцией может детектировать индексные сигналы, записанные на данной видеокамере, но не может их стереть.
- Индексный сигнал может быть стерт при выполнении PCM после записи на другом КВМ в части, где инденксный сигнал был записан.

Примечание к коду данных

При стирании индексного сигнала код данных, для той же части ленты также будет стерт.

Writing the RC time code on a recorded tape

– CCD-TR845E only

You can write the RC time code on a recorded tape. Use the Remote Commander.
Before you begin, we recommend to set COUNTER to TIME CODE in the menu system so that you can view the RC time code.
We recommend you to connect the camcorder to your TV or VCR to view the picture on the TV screen. If the viewfinder indicators do not appear on the TV screen during operation, press DISPLAY on the Remote Commander.

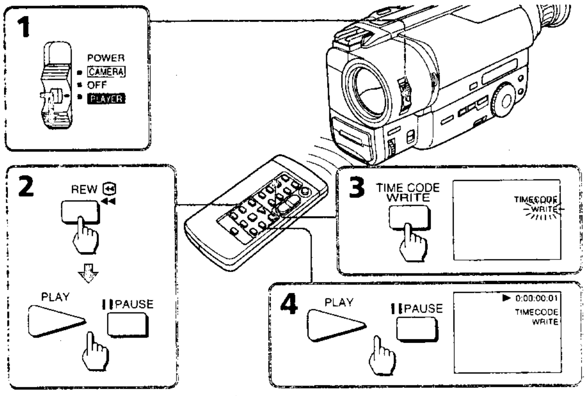
(1) While pressing the small green button on the POWER switch, set it to PLAYER.
(2) Rewind the tape to the beginning and set the camcorder to playback pause mode.
(3) Press TIME CODE WRITE on the Remote Commander. The TIME CODE WRITE indicator appears in the viewfinder with the WRITE indicator flashing.
(4) Press ▶ or ❚❚ to start playback. The WRITE indicator stops flashing and the RC time code writing starts from 0:00:00:00.

Запись временного кода RC на записанной ленте

– Только CCD-TR845E

Вы можете записать временной код RC на записанной ленте. Используйте пульт дистанционного управления.
Перед тем, как Вы начнете, мы рекомендуем установить COUNTER на TIME CODE в системе меню, так чтобы Вы могли видеть временно код RC.
Мы рекомендуем Вам подсоединить видеокамеру к Вашему телевизору или КВМ для просмотра изображения на экране телевизора. Если индикаторы видоискателя не появляются на экране телевизора во время работы, нажмите кнопку DISPLAY на пульте дистанционного управления.

(1) Нажимая маленькую зеленую кнопку на выключателе POWER, установите его в положение PLAYER.
(2) Перемотайте ленту назад на начало и установите видеокамеру на режим паузы воспроизведения.
(3) Нажмите TIME CODE WRITE на пульте дистанционного управления. Индикатор TIME CODE WRITE появляется в видоискателе с мигающим индикатором WRITE.
(4) Нажмите ▶ или ❚❚ для начала воспроизведения. Индикатор WRITE перестает мигать, и запись временного кода RC начинается с 0:00:00:00.



To stop writing the RC time code

Press ■ (or any video control button).

Для останова записи временного кода RC

Нажмите ■ (или любую кнопку видеоконтроля).

To write the RC time code from the end of the RC time code recorded portion

Rewind the tape to the portion on which the RC time code has been written and set the camcorder to playback pause mode. Then follow steps 3 and 4 above. The RC time code is written continuously.

Notes on writing the RC time code

- The RC time code writing stops when:
  - you press TIME CODE WRITE again before starting playback.
  - you press INDEX or DATE SEARCH before starting playback.
  - you change from playback mode to another mode.
- When you are writing the RC time code from the middle of a tape without the time code written, writing starts several frames before the current picture.
- If you write the RC time code on a recorded tape, the Data Code is erased.
- You can mark the RC time code on a tape recorded both in LP mode and SP mode, the RC time code written in LP mode, however, may not be read correctly.
- You cannot mark the RC time code on an NTSC-recorded tape.
- You cannot mark the RC time code on a tape with the red mark on the cassette exposed.
- A black band appears when you mark the RC time code during playback, and the sound cannot be heard. This does not affect the picture and sound that are already recorded.

Note on --:--:--:-- indicator

The --:--:--:-- indicator appears during playback if:

- nothing is recorded.
- the RC time code is unreadable because of the damage of the tape or because of the noise.
- you recorded using another VCR without RC time code function.

Для записи временного кода RC от конца записанной части с временным кодом RC

Перемотайте ленту назад до части, на которой был записан временной код RC, и установите видеокамеру на режим паузы воспроизведения. Затем следуйте вышеописанным пунктам 3 и 4. Временной код RC будет записан без перерыва.

Примечания к записи временного кода RC

- Запись временного кода RC отменяется, когда:
  - Вы нажимаете TIME CODE WRITE снова до начала воспроизведения.
  - Вы нажимаете INDEX или DATE SEARCH до начала воспроизведения.
  - Вы изменяете режим воспроизведения на другой режим.
- Если Вы записываете временной код RC с середины ленты, на которой не записан временной код RC, запись временного кода начнется на несколько кадров раньше текущего изображения.
- Если Вы записываете временной код RC на записанную ленту, то код данных стирается.
- Вы можете записать временной код RC на ленту, записанную и в режиме LP и в режиме SP, однако временной код RC, записанный в режиме LP, не может быть считан правильно.
- Вы не можете записать временной код RC на ленте, записанной в системе NTSC.
- Вы не можете записать временной код RC на ленте, если на кассете видна красная метка.
- Черная полоса появляется, когда вы записываете временной код RC во время воспроизведения, и звук прослушиваться не будет. Это не влияет на звук и изображение которые уже записаны.

Примечание к индикатору --:--:--:--

Индикатор --:--:--:-- появляется во время воспроизведения, если:

- ничего не было записано.
- временной код RC не считывается из-за повреждения ленты или из-за помех.
- Вы произвели запись с использованием другого КВМ без функции временного кода RC.

Editing onto another tape

You can create your own video programme by editing with any other 8 8 mm, Hi8 Hi8, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC or β Betamax VCR that has video/audio inputs.

Before editing

Connect the camcorder to the VCR using the supplied A/V connecting cable.
Set the input selector on the VCR to LINE, if available.
Set EDIT to ON in the menu system (p. 34).

Starting editing

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.
(2) Play back the recorded tape on the camcorder until you locate the point just before where you want to start editing, then press ❚❚ to set the camcorder in playback pause mode.
(3) On the VCR, locate the recording start point and set the VCR in recording pause mode.
(4) First press ❚❚ on the camcorder, and after few seconds press ❚❚ of the VCR to start editing.

To edit more scenes

Repeat steps 2 to 4.

To superimpose the title while you are editing

You can superimpose the title while you are editing. Refer to "Superimpose a title" (p. 55).

To stop editing

Press ■ on both the camcorder and the VCR.

Note on the DISPLAY function
If you have displayed the viewfinder screen indicators on the TV, erase the indicators by pressing DISPLAY on the Remote Commander so that they will not be superimposed on the edited tape.

Note on Fine Synchro Edit
If you connect a video deck that has the Fine Synchro Edit feature to the LANC ◐ jack of the camcorder, using a LANC cable (not supplied), the edit will be even more precise.

Монтаж на другую ленту

Вы можете создать Вашу собственную видеопрограмму путем монтажа с помощью другого КВМ типа 8 8 мм, Hi8 Hi8, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC или β Betamax, который имеет входы аудио/видео.

Перед монтажем

Подсоедините видеокамеру к КВМ, используя прилагаемый соединительный кабель аудио/видео.
Установите селектор входных сигналов на КВМ в положение LINE, если такое имеется.
Установите EDIT на ON в системе меню (стр. 34).

Начните монтаж

(1) Вставьте чистую ленту (или ленту, которую Вы хотите перезаписать) в КВМ и вставьте Вашу записанную ленту в видеокамеру.
(2) Воспроизводите записанную ленту в видеокамере до тех пор, пока Вы не обнаружите место немного раньше точки, откуда Вы хотите начать монтаж, а затем нажмите ❚❚ для установки видеокамеры на режим паузы воспроизведения.
(3) Найдите на КВМ точку начала записи и установите КВМ на режим паузы записи.
(4) Сперва нажмите ❚❚ на видеокамере, а затем через несколько секунд нажмите ❚❚ на КВМ для начала монтажа.

Для монтажа других сцен

Повторите пункты со 2 по 4.

Для наложения надписи во время монтажа

Вы можете наложить надпись во время монтажа. См. раздел "Наложение надписи" (стр. 55).

Для остановки монтажа

Нажмите ■ и на видеокамере и на КВМ.

Примечание к функции DISPLAY
Если Вы отобразили индикаторы видоискателя на экране телевизора, сотрите индикаторы путем нажатия DISPLAY на пульте дистанционного управления, так, чтобы они не накладывались на ленту при выполнении монтажа.

Примечание к точному синхронному монтажу
Если Вы подсоедините видеодеку, которая имеет функцию точного синхронного монтажа к гнезду LANC ◐ на видеокамере с использованием кабеля LANC (не прилагается), то монтаж будет еще более точный.

Additional information

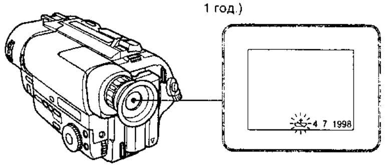
Changing the lithium battery in the camcorder

Your camcorder is supplied with a lithium battery installed. When the battery becomes weak or dead, the 🔋 indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 lithium battery. Use of any other battery may present a risk of fire or explosion.** Discard used batteries according to the manufacturer's instructions.
The lithium battery for the camcorder lasts for about 1 year under normal operation. (The lithium battery that comes installed at the factory may not last 1 year.)

Дополнительная информация

Замена литиевой батарейки в видеокамере

Ваша видеокамера снабжена установленной литиевой батарейкой. Если батарейка станет слабой или полностью разрядится, индикатор 🔋 будет мигать в видоискателе приблизительно в течение 5 секунд, когда Вы установите выключатель POWER в положение CAMERA. В таком случае **замените батарейку на литиевую батарейку Sony CR2025. Использование какой-нибудь другой батарейки может представлять риск воспламенения или взрыва.** Выбросьте использованную батарейку в соответствии с указаниями изготовителя. Литиевой батарейки для видеокамеры хватает приблизительно на 1 год при нормальных условиях эксплуатации. (Литиевой батарейки, которая была установлена на заводе, может не хватить на 1 год.)

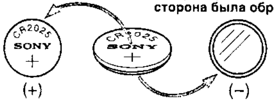


Notes on lithium battery

- **Keep the lithium battery out of the reach of children.**
  Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Note that the lithium battery has a positive (+) and a negative (–) terminals as illustrated. **Be sure to insert the lithium battery with the positive side facing out.**

Примечания к литиевой батарейке

- **Держите литиевую батарейку в не доступном для детей месте.**
  Если батарейка была проглочена, немедленно обратитесь к доктору.
- Протрите батарейку сухой тканью для обеспечения хорошего контакта.
- Не берите батарейку металлическими щипцами, или же может произойти короткое замыкание.
- Учтите, что литиевая батарейка имеет положительный (+) и отрицательный (–) полюсы, как показано на рисунке. **Обязательно вставьте литиевую батарейку так, чтобы положительная сторона была обращена наружу.**



WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

ПРЕДУПРЕЖДЕНИЕ
При неправильном обращении батарейка может взорваться. Не перезаряжайте, не разбирайте и не бросайте батарейку в огонь.

Changing the lithium battery in the camcorder

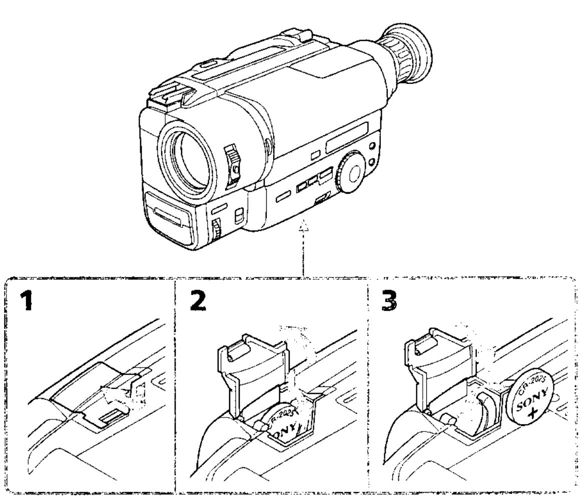
Changing the lithium battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.
(1) Open the lid of the lithium battery compartment.
(2) Push the lithium battery down once and pull it out from the holder.
(3) Install the lithium battery with the positive (+) side facing out. Close the lid.

Замена литиевой батарейки в видеокамере

Замена литиевой батарейки

При замене литиевой батарейки, оставьте подсоединенным батарейный блок или другой источник питания. В противном случае Вам понадобится снова устанавливать дату, время и другие установки в системе меню, хранимые посредством литиевой батарейки.
(1) Откройте крышку отсека литиевой батарейки.
(2) Нажмите батарейку вниз и вытащите ее из держателя.
(3) Установите литиевую батарейку положительной (+) стороной, обращенной наружу. Закройте крышку.

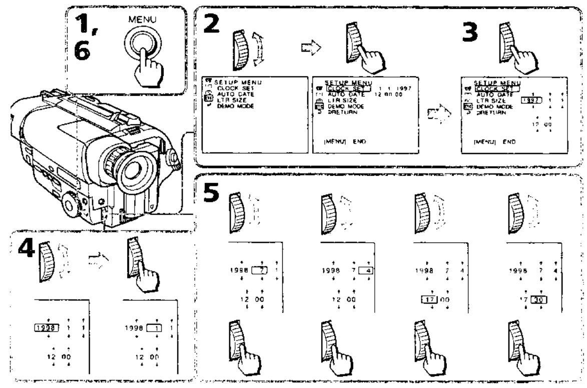


Resetting the date and time

You can reset the date and time in the menu system.
(1) While the camcorder is in Standby mode, press MENU to display the menu.
(2) Turn the control dial to select ⊟ , then press the dial.
(3) Turn the control dial to select CLOCK SET, then press the dial.
(4) Turn the control dial to adjust the desired year, then press the dial.
(5) Set the month, day, hour and minute by turning the control dial and pressing the dial.
(6) Press MENU to erase the menu display.

Установка даты и времени

Вы можете установить дату и время в системе меню.
(1) Когда видеокамера будет находится в режиме готовности нажмите MENU для отображения меню.
(2) Поверните регулировочный диск для выбора ⊟, а затем нажмите диск
(3) Поверните регулировочный диск для выбора CLOCK SET, а затем нажмите диск.
(4) Поверните регулировочный диск для регулировки желаемого года, а затем нажмите регулировочный диск.
(5) Установите месяц, дату, часы и минуты, поворачивая регулировочный диск, а затем нажимая диск.
(6) Нажмите MENU для стирания дисплея меню.



Resetting the date and time / Установка даты и времени

To correct the date and time setting

Repeat the above procedure.

To check the preset date and time

Press DATE to display the date indicator.
Press TIME to display the time indicator.
When you press the same button again, the indicator goes off.

The year changes as follows:

1997 ↔ 1998 ← ···· → 2029

Note on the time indicator

The internal clock of this camcorder operates on a 24-hour cycle.

Для корректировки установки даты и времени

Повторите вышеописанную процедуру.

Для проверки предварительно установленных даты и времени

Нажмите DATE для отображения индикатора даты.
Нажмите TIME для отображения индикатора времени.
Если Вы снова нажмете ту же самую кнопку, индикатор исчезнет.

Год изменяется следующим образом:

1997 ↔ 1998 ← ···· → 2029

Примечание к индикатору времени

Встроенные часы данной видеокамеры работают в 24-часовом цикле.

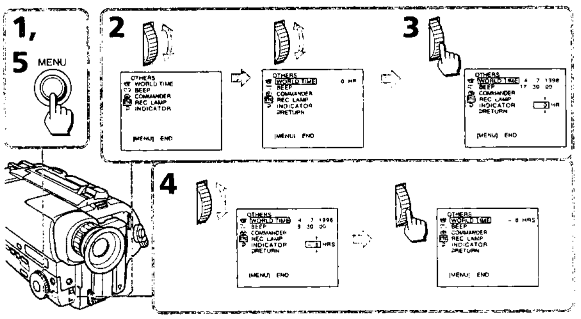
Simple setting of clock by time difference / Простая установка часов с помощью разницы во времени

You can easily set the clock for a local time by a time difference in the menu system.

(1) While the camcorder is the standby mode, press MENU to display the menu.
(2) Turn the control dial to select **ETC**, then press the dial.
(3) Turn the control dial to select WORLD TIME, then press the dial.
(4) Turn the control dial to set a time difference, and press the dial. The hour of clock changes in relation to a time difference which you set.
(5) Press MENU to erase the menu display.

Вы можете легко установить часы на местное время с помощью разницы во времени в системе меню.

(1) Когда видеокамера будет находится в режиме готовности нажмите MENU для отображения меню.
(2) Поверните регулировочный диск для выбора **ETC**, а затем нажмите диск.
(3) Поверните регулировочный диск для выбора WORLD TIME, а затем нажмите диск.
(4) Поверните регулировочный диск для установки разницы во времени, а затем нажмите диск. Время на часах изменится в соответствии с разницей во времени, которую Вы установили.
(5) Нажмите MENU для стирания дисплея меню.



Note on WORLD TIME

If the time is not set, WORLD TIME does not work.

Примечание к фукции WORLD TIME

Если время не установлено, функция WORLD TIME не работает.

Usable cassettes and playback modes / Используемые кассеты и режимы воспроизведения

Selecting cassette types

– CCD-TR840E/TR845E only

This Hi8 system is an extension of the standard 8 mm system, and was developed to realize higher picture quality.
You can use either Hi8 or standard 8 mm video cassette for this camera. When you use a Hi8 video cassette, the recording is made in the Hi8 system. When you use a standard 8 mm video cassette, the recording is made in the standard 8 mm system. Standard 8 mm video cassette is incapable of recording in the Hi8 system.
If you intend to use a standard 8 mm video recorder/player to play back a video tape, you are required to use a standard 8 mm video cassette for recording.

What is Video 8 XR/video Hi8 XR

"XR", that is an abbreviation of "Extended Resolution", represents the new type of 8 mm camcorder that has the property to realize more quality picture compared with the conventional camcorders including the Hi8 models. You can record and play back pictures more clearly in detail with the "XR" camcorder.
Video tape recorded by a camcorder having the "XR" function shows excellent picture quality at maximum when it is played back by the "XR" camcorder.
When video tape recorded by this "XR" camcorder is played back by a conventional 8/Hi8 camcorder or when video tape recorded by a conventional 8/Hi8 camcorder is played back by this "XR" camcorder, the playback picture quality is in the normal quality of the 8/Hi8 camcorder.

Выбор типа кассеты

– Только CCD-TR840E/TR845E

Эта система Hi является усовершенствованием стандартной системы 8 мм и была разработана для реализации высокого качества изображения.
Вы можете использовать для этой камеры видеокассеты Hi8 или же стандартные видеокассеты на 8-мм ленте. В случае использования видеокассет Hi-8 запись выполняется в системе Hi-8. В случае использования видеокассет на 8-мм ленте запись выполняется в системе 8 мм. Стандартная видеокассета на 8-мм ленте не может обеспечить запись в системе Hi-8.
Если Вы намереваетесь использовать стандартный видеомагнитофон/видеоплейер системы 8 мм, то следует использовать для записи стандартную видеокассету на 8-мм ленте.

Что такое видео 8 XR/видео Hi8 XR

"XR" является аббревиатурой "Extended Resolution" (усовершенствованная разрешающая способность) и представляет собой новый тип видеокамеры 8-мм системы, в которой имеется свойство реализовывать более высокое качество изображения по сравнению с обычными видеокамерами, включая модели Hi-8. С помощью видеокамеры "XR" Вы можете записывать и воспроизводить изображения более четко, с более высокой зернистостью.
Видеоленты, записанные на видеокамере с функцией "XR" обеспечивают превосходное качество изображения, особенно при воспроизведении ленты на видеокамере "XR".
Если видеоленту, записанную на данной вдеокамере "XR", воспроизводить на обычной видеокамере 8/Hi-8 или же если видеоленту, записанную на обычной видеокамере 8/Hi-8 воспроизводить на данной видеокамере "XR", качество воспроизводимого изображения будет соответтствовать качеству изображения, записанному на обычной ленте на видеокамере 8/Hi8.

Usable cassettes and playback modes / Используемые кассеты и режимы воспроизведения

When you play back

The playback mode (SP/LP) and system (Hi8/standard 8 mm) are selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Note on AFM HiFi stereo

– CCD-TR840E/TR845E only

When you play back a tape, the sound will be in monaural if:

- You record the tape using this camcorder, then play it back on an AFM HiFi monaural video recorder/player.
- You record the tape on an AFM HiFi monaural video recorder, then play it back on this camcorder.

Foreign 8 mm video

Because the TV colour systems differ from country to country, you may not be able to play back foreign pre-recorded tapes. Refer to the list of "Using your camcorder abroad" to check the TV colour system of foreign countries.

Playing back an NTSC-recorded tape

You can play back tapes recorded in the NTSC video system using the SP mode. If the tape is recorded in the AFM HiFi system, the AFM HiFi sound is reproduced (CCD-TR840E/TR845E only). However, note that the following will occur during playback of an NTSC-recorded tape.

- When playing back a tape on a TV screen, you may not get the original colour depending on the TV. When you play back on a Multi System TV, set NTSC PB to the desired mode in the menu system.
- During playback, a black band appears on the lower part of the viewfinder.
- You cannot play back a tape recorded in NTSC video system with LP mode neither on the viewfinder nor on a TV screen.
- If a tape has portions recorded in PAL and NTSC video systems, the tape counter reading is not correct. This discrepancy is due to the difference between the counting cycle of the two video systems.
- You cannot edit the NTSC-recorded tape onto another VCR.

Когда Вы осуществляете воспроизведение

Режим воспроизведения (SP/LP) и система (Hi8/8-мм стандарт) выбираются автоматически в соответствии с форматом, в котором была записана лента. Однако, качество изображения, записанного в режиме LP, не будет таким хорошим, как при записи в режиме SP.

Примечание к стереозвучанию AFM Hi-Fi

– Только CCD-TR840E/TR845E

Когда Вы воспроизводите ленту, звук будет монофоническим, если:

- Вы записали ленту с использоеанием данной видеокамеры, а затем воспроизводите ее на монофоническом видеомагнитофоне/видеоплейере AFM Hi-Fi.
- Вы записали ленту на монофоническом видеомагнитофоне AFM Hi-Fi, а затем воспроизводите на данной видеокамере.

Иностранные 8-мм видеоленты

Так как системы цветного телевидения отличаются в зависимости от страны, то может быть Вы не сможете воспроизводить иностранные предварительно записанные ленты. Смотрите перечень в разделе "Использование Вашей видеокамеры за границей" для проверки системы цветного телевидения иностранных государств.

Воспроизведение ленты, записанной в системе NTSC

Вы можете воспроизводить ленты, записанные в видеосистеме NTSC с использованием режима SP. Если лента записана в системе AFM Hi-Fi, то будет воспроизводиться звучание AFM Hi-Fi (только CCD-TR840E/TR845E). Однако, обратите внимание на то, что следующее будет происходить во время воспроизведения ленты, записанной в системе NTSC.

- При воспроизведении на экране телевизора Вы можете не получить подлинные цвета в зависимости от телевизора. Если Вы воспроизводите ленту на мультисистемном телевизоре, установите NTSC PB на желаемый режим в системе меню.
- Во время воспроизведения черная полоса появляется в нижней части видоискателя.
- Вы не можете воспроизводить ленты, записанные в системе NTSC, в режиме LP ни в видоискателе, ни на экране телевизора.
- Если лента имеет части, записанные в видеосистемах PAL и NTSC, показания счетчика будут неправильные. Это расхождение происходит из-за разницы между расчетом времени двух видеосистем.
- Вы не можете производить монтаж ленты, записанной в системе NTSC, на другой КВМ.

Tips for using the battery pack

Советы по использованию батарейного блока

This section shows you how you can get the most out of your battery pack.

Preparing the battery pack

Always carry additional batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is shorter in a cold environment

Battery efficiency is decreased, and the battery will be used up more quickly, if you are recording in a cold environment.

To save battery power

Turn STANDBY down when not recording to save battery power.
A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

When to replace the battery pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up. Remaining time in minutes appears.

Данный раздел показывает, как Вы можете получить наибольшую отдачу от Вашего батарейного блока

Подготовка батарейного блока

Всегда носите дополнительные батарейные блоки

Имейте достаточный заряд батарейного блока для выполнения записи в 2 - 3 раза больше, чем Вы запланировали.

Срок службы заряда батарейного блока будет короче в холодных условиях

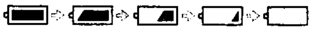
Эффективность батарейного блока снижается, и заряд батарейного блока используется быстрее, если Вы производите запись в холодных условиях.

Для экономии заряда батарейного блока

Поверните STANDBY вниз, когда Вы не производите запись для экономии заряда батарейного блока.
Плавный переход между сценами может быть выполнен, даже если запись была остановлена и начата снова. Когда Вы позиционируете объект, выбираете угол или смотрите в объектив видоискателя, объектив перемещается автоматически, и батарейный блок будет использоваться. Батарейный блок также используется при вставке и удалении ленты.

Когда заменять батарейный блок

Когда Вы используете видеокамеру, индикатор оставшегося заряда батарейного блока постепенно уменьшается по мере использования заряда батарейного блока. Также появляется оставшееся время в минутах.



When the remaining battery indicator reaches the lowest point, the ▭ indicator may appear and start flashing in the viewfinder.
When the ▭ indicator changes from slow flashing to rapid flashing while you are recording, set the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack has been replaced.

Когда индикатор оставшегося заряда батарейного блока достигает наинизшей точки, индикатор ▭ появляется и начинает мигать в видоискателе.
Когда индикатор ▭ изменяет медленное мигание на быстрое мигание во время записи, установите выключатель POWER в положение OFF на видеокамере и замените батарейный блок. Оставьте ленту в видеокамере для получения плавного перехода между сценами после замены батарейного блока.

Notes on the rechargeable battery pack

Caution

Never leave the battery pack in temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight.

The battery pack heats up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern and is normal.

Be sure to observe the following

- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor try to disassemble the battery pack.
- Do not expose the battery pack to any mechanical shock.

The life of the battery pack

If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature

You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 86°F). Lower temperatures require a longer charging time.

Примечания к перезаряжаемому батарейному блоку

Предостережение

Никогда не оставляйте батарейный блок при температуре свыше 60° C (140° F), как например, в автомобиле, припаркованном на солнце, или под прямыми солнечными лучами.

Батарейный блок нагревается

Во время зарядки или записи батарейный блок нагревается. Это вызвано генерируемой энергией и химическими реакциями, которые происходят внутри батарейного блока. Это не должно быть причиной для беспокойства и является нормальным.

Обязательно соблюдайте следующее

- Храните батарейный блок подальше от огня.
- Храните батарейный блок сухим.
- Не пытайтесь открыть или разобрать батарейный блок.
- Не подвергайте батарейный блок никаким механическим ударам.

Срок службы батарейного блока

Если индикатор батарейного блока мигает быстро сразу после включения видеокамеры с полностью заряженным батарейным блоком, батарейный блок должен быть заменен новым полностью заряженным батарейным блоком.

Температура зарядки

Вы должны заряжать батарейный блок при температуре от 10° C до 30° C (от 50° F до 86° F). Более низкая температура требует более длительного времени зарядки.

Notes on the "InfoLITHIUM" battery pack

What is "InfoLITHIUM"

The "InfoLITHIUM" is a lithium ion battery pack which can exchange data with compatible video equipment about its battery consumption. Sony recommends that you use the "InfoLITHIUM" battery pack with video equipment having the ⓘInfoLITHIUM mark.
When you use this battery pack with video equipment having the ⓘInfoLITHIUM mark, the video equipment will indicate the remaining battery time in minutes*. However, if you use it with video equipment not having this mark, the remaining battery capacity will not be indicated in minutes.
"InfoLITHIUM" is a trademark of Sony Corporation.

* The indication may not be accurate depending on the condition and environment which the equipment is used under.

How the battery consumption is displayed

The power consumption of the camcorder changes depending on its use, such as how the autofocusing is working.
While checking the condition of the camcorder, the "InfoLITHIUM" battery pack measures the battery consumption and calculates the remaining battery power. If the condition changed drastically, the remaining battery indication may suddenly decrease or increase by more than 2 minutes.
Even if 5 to 10 minutes is indicated as the battery remaining time in the viewfinder, the ▭ indicator may also flash under some condition.

Примечания к батарейному блоку "InfoLITHIUM"

Что такое "InfoLITHIUM"

"InfoLITHIUM" является литиево-ионным батарейным блоком, который может обмениваться данными с совместимой видеоаппаратурой относительно расхода заряда батарейного блока.
Фирма Sony рекомендует, чтобы Вы использовали батарейный блок "InfoLITHIUM" с видеоаппаратурой, имеющей знак ⓘInfoLITHIUM.
При использовании данного батарейного блока с видеоаппаратурой, имеющей знак ⓘInfoLITHIUM, видеоаппаратура будет показывать оставшееся время заряда батарейного блока в минутах.* Однако, если Вы используете его с видеоаппаратурой, не имеющей такого знака, оставшаяся емкость батарейного блока не указывается в минутах.
"InfoLITHIUM" является товарным знаком корпорации Sony.

* Показание можеть быть неточным, в зависимости от условий и окружающей среды при которых используется аппаратура.

Как отображается расход заряда батарейного блока

Потребляемая мощность видеокамерой изменяется в зависимости от условий ее использования, как например, работает ли автоматическая фокусировка.
Во время проверки состояния видеокамеры батарейный блок "InfoLITHIUM" измеряет расход батарейного заряда и вычисляет оставшийся заряд батарейного блока. Если условия использования сильно изменяются, индикация оставшегося заряда батарейного блока может резко уменьшиться или увеличиться более чем на 2 минуты.
Даже если 5 или 10 минут указано или в видоискателе в качестве оставшегося времени заряда батарейного блока, индикатор ▭ может все же мигать при некоторых условиях.

To obtain more accurate remaining battery indication

Set the camcorder to recording standby mode and point towards a stationary object. Do not move the camcorder for 30 seconds or more.

- If the indication seems incorrect, recharge the battery pack fully (Full charge*). Note that if you have used the battery in a hot or cold environment for long time, or you have repeated charging many times, the battery pack may not be able to show the correct time even after being fully charged.
- After you have used the "InfoLITHIUM" battery pack with an equipment not having the ⓘInfoLITHIUM mark, make sure that you use up the battery pack on the equipment having the ⓘInfoLITHIUM mark and then recharge fully.

Why the remaining battery indication does not match the continuous recording time in the operating instructions

The recording time is affected by the environmental temperature and conditions. The recording time becomes very short in a cold environment. The continuous recording time in the operating instructions is measured under the condition of using a fully charged (or normal charged) battery pack in 25°C (77°F). As the environmental temperature and condition are different when you actually use the camcorder, the remaining battery time is not same as the continuous recording time in the operating instructions.

* Full charge: Charging until FULL appears in the display window.

Для получения более точной индикации оставшегося заряда батарейного блока

Установите видеокамеру на режим готовности записи и наведите ее на неподвижный объект. Не двигайте видеокамеру в течение 30 секунд или более.

- Если индикация кажется неправильной, зарядите батарейный блок полностью (полная зарядка *). Имейте в виду, что если Вы использовали батарейный блок в жарких или холодных окружающих условиях в течение длительного времени, или если Вы повторяли зарядку много раз, батарейный блок может не показывать правильное время даже после полной зарядки.
- После использования батарейного блока "InfoLITHIUM" с аппаратурой, которая не имеет знака ⓘInfoLITHIUM обязательно используйте заряд батарейного блока до конца с аппаратурой, имеющей знак ⓘInfoLITHIUM, а затем полностью зарядите его.

Почему индикация оставшегося заряда батарейного блока не соответствует времени непрерывной записи, указанном в инструкции по эксплуатации

На время записи влияет температура окружающей среды и другие условия. Время записи становится очень коротким в холодных условиях. Время непрерывной записи, указанное в инструкции по эксплуатации, измеряется в условиях использования полностью заряженного батарейного блока (или нормально заряженного) при температуре 25°C (77°F). Так как температура окружающей среды и другие условия отличаются от реальных условий использования видеокамеры, то время оставшегося заряда батарейного блока будет не таким, как время непрерывной записи, указанное в инструкции по эксплуатации.

* Полная зарядка: Зарядка до тех пор, пока FULL не появится в окошке дисплея.

Maintenance information and precautions

Информация по уходу за аппаратом и предосторожности

Moisture condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. Please, take the following precautions.

Inside the camcorder

If there is moisture inside the camcorder, the beep sounds and the ▣ indicator flashes. If this happens, none of the functions except cassette ejection will work. Open the cassette compartment, turn off the camcorder, and leave it about 1 hour. When ⏏ indicator flashes at the same time, the cassette is inserted in the camcorder. Eject the cassette, turn off the camcorder, and leave also the cassette about 1 hour. The camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.

On the lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to prevent moisture condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.

(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Конденсация влаги

Если видеокамера принесена прямо из холодного места в теплое место, влага может сконденсироваться внури видеокамеры, на поверхности ленты или на объективе. В таком состоянии лента может прилипнуть к барабану головки и будет повреждена, или видеокамера не сможет работать правильно. Для предотвращения возможного повреждения ввиду таких обстоятельств, видеокамера снабжена датчиками влаги. Соблюдайте следующие предосторожности.

Внутри видеокамеры

Если внутри видеокамеры произошла конденсация влаги, то будет звучать зуммерный сигнал, и индикатор ▣ будет мигать. Если это случилось, то никакие функции, кроме выталкивания кассеты, не будут работать. Откройте кассетный отсек, выключите видеокамеру и оставьте ее приблизительно на 1 час. Если индикатор ⏏ будет мигать в то же самое время, то значит кассета вставлена в видеокамеру. Вытолкните кассету, выключите видеокамеру и оставьте кассету приблизительно на 1 час. Видеокамера снова может быть использована, если индикатор ▣ не будет появляться после включения питания.

На объективе

Если влага сконденсировалась на объективе, никакие индикаторы появляться не будут, но изображение станет тусклым. Выключите питание и не ипользуйте видеокамеру приблизительно 1 час.

Как предотвратить конденсацию влаги

Если видеокамера принесена из холодного места в теплое место, то положите видеокамеру в полиэтиленовый пакет и дайте ей адаптироваться к комнатным условиям за некоторый период времени.

(1) Обязательно плотно закройте полиэтиленовый пакет, содержащий камеру.

(2) Выньте камеру, когда температура воздуха внутри пакета достигнет температуры окружающего воздуха (приблизительно через 1 час).

Video head cleaning

To ensure normal recording and clear pictures, clean the video heads. When the ⊗ indicator and "■ CLEANING CASSETTE" message appear one after another or playback pictures are "noisy" or hardly visible, the video heads may be dirty.

Очистка видеоголовок

Для обеспечения нормальной записи и четкого изображения очищайте видеоголовки. Когда индикатор ⊗ и сообщение "■ CLEANING CASSETTE" появляются одно за другим или воспроизводимое изображение будет "зашумленным" или трудно просматриваемым, видеоголовки наверное загрязнены.

[a] Slightly dirty
[b] Very dirty

[a] Слегка загрязнены
[b] Очень загрязнены

If this happens, clean the video heads with the Sony V8-25CLH/V8-25CLD cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times in one session.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the Sony V8-25CLH/V8-25CLD cleaning cassette is not available in your area, consult your nearest Sony dealer.

Если это случится, очистите видеоголовки с помощью очистительной кассеты Sony V8-25CLH/V8-25CLD (не прилагается). После проверки изображения, если оно все еще "зашумлено", повторите очистку. (Не повторяйте очистку более 5 раз за один прием.)

Предостережение
Не используйте имеющуюся в продаже очистительную кассету влажного типа. Она может повредить видеоголовки.

Примечание
Если очистительной кассеты Sony V8-25CLH/V8-25CLD нет в продаже в Вашей области, проконсультируйтесь у Вашего ближайшего дилера Sony.

Removing dust from inside the viewfinder

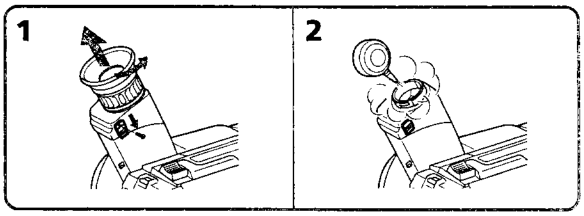
(1) Remove the screw with a screwdriver (not supplied). Then, while sliding the RELEASE knob, turn the eyecup in the direction of the arrow and pull it out.

(2) Clean the surface with a commercially available blower.

Удаление пыли из видоискателя

(1) Снимите винт с помощью отвертки (не прилагается). Затем сдвигая ручку RELEASE, поверните окуляр в напралении стрелки и вытащите его.

(2) Очистите поверхность с помощью имеющейся в продаже воздуходувки.



To reattach the eyecup

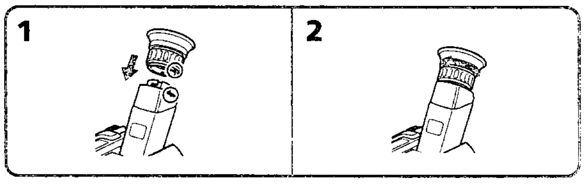
(1) Align the groove on the eyecup with the • mark on the barrel.

(2) Turn the eyecup in the direction of the arrow. Then replace the screw.

Для присоединения окуляра

(1) Совместите канавку на окуляре с меткой • на корпусе.

(2) Поверните окуляр в направлении стрелки. Затем установите на место винт.



Caution
Do not remove any other screws. You may remove only the screw to remove the eyecup.

Предостережение
Не снимайте никаких других винтов. Вы можете открутить только винт для снятия окуляра.

Precautions

Camcorder operation

- Operate the camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch setting to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

On handling tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape and if the recording tab is in or out.

Camcorder care

- When the camcorder is not to be used for a long time, remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

Предосторожности

Эксплуатация видеокамеры

- Эксплуатируйте видеокамеру от 7,2 В (батарейный блок) или 8,4 В (сетевой адаптер перем. тока).
- Для эксплуатации от постоянного тока или переменного тока используйте принадлежности, рекомендованные в данном руководстве.
- Если какой-нибудь твердый предмет или жидкость попали в корпус, то выключите видеокамеру и проверьте ее у дилера Sony перед дальнейшей ее эксплуатацией.
- Избегайте грубого обращения или механических ударов. Будьте особенно осторожны с объективом.
- Держите выключатель POWER в положении OFF, когда видеокамера не используется.
- Не заворачивайте видеокамеру и не эксплуатируйте ее в таком состоянии, так как может произойти внутреннее повышение температуры.
- Держите видеокамеру подальше от сильных магнитных полей или механической вибрации.

Относительно обращения с лентами

Не вставляйте ничего в маленькие отверстия на задней стороне кассеты. Эти отверстия используются для определения типа ленты, толщины ленты и наличия лепестка записи.

Уход за видеокамерой

- Когда видеокамера не используется в течение длительного времени, удалите ленту. Периодически включайте питание, работайте с секциями камеры и плейера и воспроизводите ленту приблизительно в течение 3-х минут.
- Очищайте объектив с помощью мягкой кисточки для удаления грязи. Если имеются отпечатки пальцев на объективе, то удалите их с помощью мягкой ткани.
- Очищайте корпус аппарата с помощью сухой мягкой ткани или мягкой ткани, слегка смоченной раствором умеренного моющего средства. Не используйте каких-либо типов растворителей, которые могут повредить отделку.

Maintenance information and precautions

- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction, and sometimes this malfunction cannot be repaired.

AC power adaptor

- Unplug the unit from the mains when not in use for a long time. To disconnect the mains lead, pull it out by the plug. Never pull the mains lead itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the mains lead forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

Информация по уходу за аппаратом и предосторожности

- Не позволяйте песку попасть в видеокамеру. Когда Вы используете видеокамеру на песчаном пляже или в пыльном месте, предохраняйте ее от песка и пыли. Песок и пыль могут вызвать неисправность аппарата, и иногда такая неисправность может не подлежать ремонту.

Сетевой адаптер перем. тока

- Отсоедините аппарат от электрической сети, если он не используется длительное время. Для отсоединения сетевого провода вытащите его за разъем. Никогда не тяните за сам сетевой провод.
- Не эксплуатируйте аппарат с поврежденным проводом, или если аппарат упал или был поврежден.
- Не сгибайте сетевой провод силой и не ставьте на него тяжелые предметы. Это повредит провод и может привести к пожару или удару электрическим током.
- Убедитесь, что никакие металлические предметы не соприкасаются с металлическими частями соединительной пластины. Если это случится, может произойти короткое замыкание, и аппарат может быть поврежден.
- Всегда поддерживайте металлические контакты в чистоте.
- Не разбирайте аппарат.
- Не подвергайте аппарат механическим ударам и не роняйте его.
- Когда аппарат используется, особенно во время зарядки, держите его подальше от радиоприемников АМ и видеоаппаратуры, потому что он будет нарушать прием АМ и работу видеоаппаратуры.
- Аппарат становится теплым во время зарядки. Это является нормальным.
- Не размещайте аппарат в местах, которые:
  - Чрезмерно жаркие или холодные
  - Пыльные или грязные
  - Очень влажные
  - Подвержены вибрации

Maintenance information and precautions

Notes on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following.

- Be sure to insert the batteries in the correct direction.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- The batteries slowly discharge while not in use.
- Do not use a battery that is leaking.

If battery leakage occurred

- Wipe off the liquid in the battery case carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Информация по уходу за аппаратом и предосторожности

Примечания к сухим батарейкам

Во избежание возможного повреждения из-за протечки батареек или корроизии соблюдайте следующее.

- Обязательно вставьте батарейки с правильным направлением.
- Сухие батарейки не являются перезаряжаемыми.
- Не используйте комбинацию старых и новых батареек.
- Не используйте различные типы батареек.
- Батарейки медленно разряжаются, даже если не используются.
- Не используйте батарейку, которая протекла.

Если случится протечка батареек

- Тщательно вытрите жидкость в батарейном отсеке перед установкой батареек.
- Если Вы дотронетесь до жидкости, то промойте это место водой.
- Если жидкость попала Вам в глаза, то промойте Ваши глаза большим количеством воды, а затем обратитесь к врачу.

В случае возникновения каких-либо трудностей, отключите аппарат и обратитесь к Вашему ближайшему дилеру Sony.

Using your camcorder abroad

Each country or area has its own electric and TV colour systems. Before using your camcorder abroad, check the following points.

Power sources

You can use your camcorder in any country or area with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz.

Difference in colour systems

This camcorder is a PAL system based camcorder. If you want to view the playback picture on a TV, it must be a PAL system based TV.
Check the following list.

PAL system
Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

SECAM system
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Использование Вашей видеокамеры за границей

Каждая страна или область имеет свои собственные системы электрической сети и цветного телевидения. Перед использованием Вашей видеокамеры за границей проверьте следующие пункты.

Источники питания

Вы можете использовать видеокамеру в любой стране или области с помощью прилагаемого сетевого адаптера перем. тока в пределах от 100 В до 240 В перем. тока, 50/60 Гц.

Различия в системах цветного телевидения

Данная видеокамера основана на системе PAL. Если Вы хотите просмотреть воспроизводимое изображение на телевизоре, то это должен быть телевизор, основанный на системе PAL.
Проверьте по следующему перечню.

Система PAL
Австралия, Австрия, Бельгия, Великобритания, Германия, Голландия, Гонконг, Дания, Испания, Италия, Китай, Кувейт, Малайзия, Новая Зеландия, Норвегия, Португалия, Сингапур, Словацкая Республика, Тайланд, Финляндия, Чешская Республика, Швейцария, Швеция и т.д.

Система PAL-M
Бразилия

Система PAL-N
Аргентина, Парагвай, Уругвай

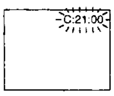
Система NTSC
Багамские острова, Боливия, Венесуэла, Канада, Колумбия, Корея, Мексика, Перу, Суринам, США, Тайвань, Филиппины, Центральная Америка, Чили, Эквадор, Ямайка, Япония и т.д.

Система SECAM
Болгария, Венгрия, Гайяна, Ирак, Иран, Монако, Польша, Россия, Украина, Франция и т.д.

Self-diagnosis display

The camcorder has a self-diagnosis display. This function displays the camcorder's condition with five digits (a combination of a letter and figures) in the viewfinder or in the display window. If this occurs, check the following code chart. The five-digit display informs you of the camcorder's current condition. The last two digits (indicated by □□) will differ depending on the state of the camcorder.

Viewfinder



Self-diagnosis display

- C:□□:□□
  You can service the camcorder yourself.
- E:□□:□□
  Contact your Sony dealer or local authorized Sony facilitiy.

Five-digit display	Cause and/or Corrective Actions
C:21:□□	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least 1 hour. (p. 85)
C:22:□□	• The video heads are dirty. → Clean the heads using the Sony V8-25CLH/V8-25CLD cleaning cassette (not supplied). (p. 86)
C:23:□□	• You are using a battery pack that is not an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack. (p. 83)
C:31:□□ C:32:□□	• A servicable situation not malfunctioned above has occurred. → Remove the cassette and insert it again, then operate the camcorder. → Disconnect the mains lead of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate the camcorder.
E:61:□□ E:62:□□	• A camcorder malfunction which you cannot service has occurred. → Contact your Sony dealer or local authorized Sony service facility and inform them of the five digits. (example: E:61:10)

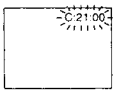
If you are unable to resolve the problem, contact your Sony dealer or local authorized Sony service facility.

Русский

Дисплей самодиагностики

Видеокамера имеет дисплей самодиагностики.
Данная функция отображает состояние видеокамеры с помощью пяти знаков (комбинация буквы и цифр) в видоискателе или в окошке дисплея. Если это случится, проверьте следующую кодовую таблицу. Последние две цифры (указанных как □□) будут различаться в зависимости от состояния видеокамеры.

Видоискатель



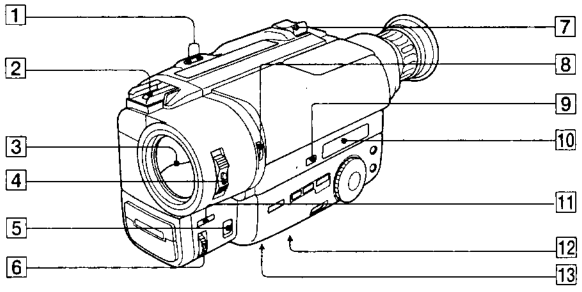
Дисплей самодиагностики

- C:□□:□□
  Вы можете выполнить техническое обслуживание видеокамеры самостоятельно.
- E:□□:□□
  Свяжитесь с Вашим дилером Sony или местным уполномоченным предприятием Sony.

Пятизначный дисплей	Вероятная причина и/или метод устранения.
C:21:□□	• Произошла конденсация влаги. → Выньте кассету и оставьте видеокамеру по меньшей мере на 1 час. (стр. 85)
C:22:□□	• Грязные видеоголовки. → Очистите видеоголовки с использованием очистительной кассеты Sony V8-25CLH/V8-25CLD фирмы Sony (не прилагается). (стр. 86)
C:23:□□	• Вы используете батарейный блок, который не является батарейным блоком "InfoLITHIUM". → Используйте батарейный блок "InfoLITHIUM". (стр. 83)
C:31:□□ C:32:□□	• Состояние для обслуживания не вызвано вышеописанными проблемами. → Выньте кассету и вставьте ее снова, а затем управляйте видеокамерой. → Отсоедините провод электропитания сетевого адаптера переменного тока или удалите батарейный блок. После обратного подсоединения источника питания управляйте видеокамерой.
E:61:□□ E:62:□□	• Случилась неисправность видеокамеры, для которой Вы не можете выполнить техническое обслуживание. → Свяжитесь с Вашим дилером Sony или местным уполномоченным предприятием Sony и проинформируйте их о появлении пяти знаков. (Например: E:61:10)

Если Вы не можете решить проблему, то свяжитесь с Вашим дилером Sony или местным уполномоченным предприятием Sony.

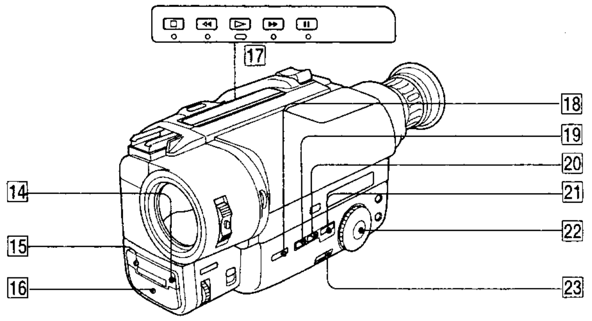
Identifying the parts / Опознавание частей



1 **EDITSEARCH button** (p. 22)
2 **Intelligent accessory shoe** (CCD-TR840E/TR845E only) (p. 111)/**Accessory shoe** (CCD-TR511E/TR640E only)
3 **Lens cover**
4 **POWER switch** (p. 14)
5 **FOCUS switch** (CCD-TR511E/TR640E/TR840E/TR845E only) (p. 50)
6 **NEAR/FAR dial** (CCD-TR511E/TR640E/TR840E/TR845E only) (p. 50)
7 **Power zoom lever** (p. 17)
8 **NIGHTSHOT switch** (CCD-TR511E/TR640E/TR840E/TR845E only) (p. 44)
9 **COUNTER RESET button** (p. 16)
10 **Display window** (p. 112)
11 **FADER button** (CCD-TR511E/TR640E/TR840E/TR845E only) (p. 42)
12 **Tripod receptacle** (p. 21)
Make sure that the length of the tripod screw is less than 6.5 mm (9/32 inch) otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.
13 **Lithium battery compartment** (p. 75)

1 **Кнопка EDITSEARCH** (стр. 22)
2 **Башмак для установки вспомогательного оборудования** (только CCD-TR840E/TR845E) (стр. 111) / **Держатель для вспомогательных принадлежностей** (только CCD-TR511E/TR640E)
3 **Крышка объектива**
4 **Выключатель POWER** (стр. 14)
5 **Переключатель FOCUS** (только CCD-TR511E/TR640E/TR840E/TR845E) (стр. 50)
6 **Диск NEAR/FAR** (только CCD-TR511E/TR640E/TR840E/TR845E) (стр. 50)
7 **Рычаг приводного трансфокатора** (стр. 17)
8 **Выключатель NIGHTSHOT** (только CCD-TR511E/TR640E/TR840E/TR845E) (стр. 44)
9 **Кнопка COUNTER RESET** (стр. 16)
10 **Окошко дисплея** (стр. 112)
11 **Кнопка FADER** (только CCD-TR511E/TR640E/TR840E/TR845E) (стр. 42)
12 **Держатель треноги** (стр. 21)
Убедитесь, что длина винта треноги менее 6,5 мм. В противном случае Вы не сможете надежно подсоединить треногу, а винт может повредить видеокамеру.
13 **Отсек литиевой батарейки** (стр. 75)

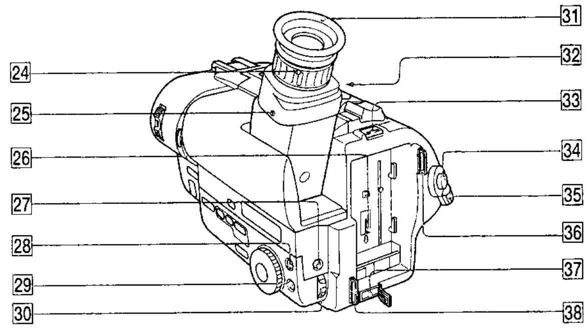
Identifying the parts / Опознавание частей



14 **Remote sensor** (CCD-TR412E/TR511E/TR640E/TR840E/TR845E only) (p. 109)
Aim the Remote Commander here for remote control.
15 **Camera recording/battery lamp** (p. 14)
16 **Microphone**
17 **Video control buttons** (p. 26)
■ STOP (stop)
◀◀ REW (rewind)
▶ PLAY (playback)
▶▶ FF (fastforward)
❚❚ PAUSE (pause)
18 **BACK LIGHT button** (p. 40)
19 **DATE button** (p. 29, 60)
20 **TIME button** (p. 29, 60)
21 **TITLE button** (p. 55)
22 **PROGRAM AE dial** (p. 48)
23 **START/STOP MODE switch** (p. 19)

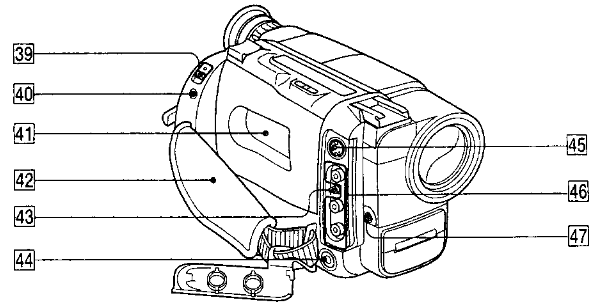
14 **Дистанционный датчик** (только CCD-TR412E/TR511E/TR640E/TR840E/TR845E) (стр. 109)
Нацельте пульт дистанционного управления сюда для дистанционного контроля.
15 **Лампочка записи камерой/батареи** (стр. 14)
16 **Микрофон**
17 **Кнопки видеоконтроля** (стр. 26)
■ STOP (остановка)
◀◀ REW (ускоренная перемотка назад)
▶ PLAY (воспроизведение)
▶▶ FF (ускоренная перемотка вперед)
❚❚ PAUSE (пауза)
18 **Кнопка BACK LIGHT** (стр. 40)
19 **Кнопка DATE** (стр. 29, 60)
20 **Кнопка TIME** (стр. 29. 60)
21 **Кнопка TITLE** (стр. 55)
22 **Кнопка PROGRAM AE** (стр. 48)
23 **Переключатель START/STOP MODE** (стр. 19)

Identifying the parts / Опознавание частей



24 **Viewfinder lens adjustment ring** (p. 15)
25 **Viewfinder** (p. 15)
26 **Battery mounting surface**
27 **EXPOSURE button** (CCD-TR511E/TR640E/TR840E/TR845E only) (p. 53)
28 **PICTURE EFFECT button** (p. 52)
29 **MENU button** (p. 34)
30 **Control dial** (p. 34)
31 **Eyecup**
32 **Eyecup RELEASE knob** (p. 87)
33 **BATT RELEASE lever** (p. 12)
34 **START/STOP button** (p. 14)
35 **STANDBY switch** (p. 14)
36 **Hook for shoulder strap** (p. 110)
37 **DC IN jack** (p. 9, 32)
38 **Hook for shoulder strap** (p. 110)

24 **Кольцо регулировки объектива видоискателя** (стр. 15)
25 **Виискатель** (стр. 15)
26 **Поверхность установки батарейного блока**
27 **Кнопка EXPOSURE** (только CCD-TR511E/TR640E/TR840E/TR845E) (стр. 53)
28 **Кнопка PICTURE EFFECT** (стр. 52)
29 **Кнопка MENU** (стр. 34)
30 **Регулировочный диск** (стр. 34)
31 **Окуляр**
32 **Ручка окуляра RELEASE** (стр. 87)
33 **Рычаг BATT RELEASE** (стр. 12)
34 **Кнопка START/STOP** (стр. 14)
35 **Переключатель STANDBY** (стр. 14)
36 **Скоба для плечевого ремня** (стр. 110)
37 **Гнездо DC IN** (стр. 9, 32)
38 **Скоба для плечевого ремня** (стр. 110)



39 **EJECT switch** (p. 13)

40 **LANC ⅃ control jack**
⅃ stands for Local Application Control Bus System. The ⅃ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

41 **Cassette compartment** (p. 13)

42 **Grip strap** (p. 20)

43 **RFU DC OUT (RFU adaptor DC output) jack** (p. 25)

44 **∩ (headphones) jack** (CCD-TR840E/TR845E only) (p. 27)

45 **S VIDEO OUT jack** (CCD-TR840E/TR845E only) (p. 25)

46 **VIDEO/AUDIO OUT jacks** (p. 24)

47 **MIC jack (PLUG IN POWER)**
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

39 **Выключатель EJECT** (стр. 13)

40 **Гнездо управления LANC ⅃**
⅃ означает систему канала местного управления. Гнездо управления ⅃ используется для контроля за перемещением ленты видеооборудования и периферийных устройств, подключенных к нему. Данное гнездо имеет такую же функцию, как и разъемы, обозначенные как CONTROL L или REMOTE.

41 **Кассетный отсек** (стр. 13)

42 **Ременной захват** (стр. 20)

43 **Гнездо RFU DC OUT (выход пост. тока ВЧ-адаптера)** (стр. 25)

44 **Гнездо ∩ (головных телефонов)** (только CCD-TR840E/TR845E) (стр. 27)

45 **Гнездо S VIDEO OUT** (только CCD-TR840E/TR845E) (стр. 25)

46 **Гнезда VIDEO/AUDIO OUT** (стр. 24)

47 **Гнездо MIC (PLUG IN POWER)**
Для подсоединения внешнего микрофона (не прилагается). Это гнездо допускает подключение микрофона "с выключателем питания".

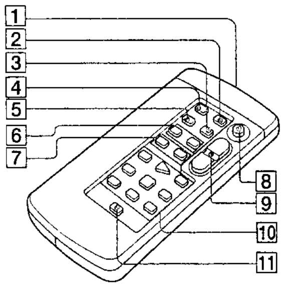
Remote Commander

– CCD-TR412E/TR511E/TR640E/TR840E/TR845E only
The buttons that have the same name on the Remote Commander as on the camcorder function identically.

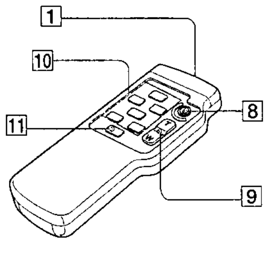
Пульт дистанционного управления

– Только TR412E/TR511E/TR640E/TR840E/TR845E
Кнопки пульта дистанционного управления, которые имеют одинаковые наименования с кнопками на видеокамере, функционируют идентично.

RMT-717



RMT-708



1 **Transmitter**
Point toward the remote sensor to control the camcorder after turning on the camcorder.

2 **ZERO MEM button** (p. 59, 65)

3 **DATA CODE button** (p. 30)

4 **COUNTER RESET button** (p. 16)

5 **TIME CODE WRITE button** (p. 71)

6 **INDEX buttons**
INDEX MARK button (p. 66)
INDEX ERASE button (p. 70)

7 **DATE SEARCH button** (p. 64)
INDEX SEARCH button (p. 69)

8 **START/STOP button** (p. 14)

9 **Power zoom button** (p. 17)

10 **Video control buttons** (p. 26)

11 **DISPLAY button** (p. 27)

1 **Передатчик**
Нацельте в направлении дистанционного датчика для управления видеокамерой после ее включения.

2 **Кнопка ZERO MEM** (стр. 59, 65)

3 **Кнопка DATA CODE** (стр. 30)

4 **Кнопка COUNTER RESET** (стр. 16)

5 **Кнопка TIME COD WRITE** (стр. 71)

6 **Кнопки INDEX**
Кнопка INDEX MARK (стр. 66)
Кнопка INDEX ERASE (стр. 70)

7 **Кнопки DATE SEARCH** (стр. 64)
Кнопка INDEX SEARCH (стр. 69)

8 **Кнопка START/STOP** (стр. 14)

9 **Кнопка приводного трансфокатора** (стр. 17)

10 **Кнопки видеоконтроля** (стр. 26)

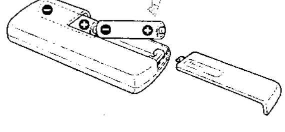
11 **Кнопка DISPLAY** (стр. 27)

Notes on the Remote Commander
- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor on the camcorder and the Remote Commander.
- This camcorder works in commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

To prepare the Remote Commander

Insert two R6 (size AA) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

RMT-717



Note on battery life
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

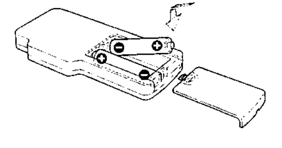
To avoid damage from possible battery leakage
Remove the batteries when you will not use the Remote Commander for a long time.

Примечания к пульту дистанционного управления
- Держите дистанционный датчик подальше от сильных источников света, как например, прямые солнечные лучи или иллюминация. В противном случае дистанционное управление может не действовать.
- Убедитесь, что между дистанционным датчиком на видеокамере и пультом дистанционного управления нет препятствия.
- Данная видеокамера работает в режиме пульта дистанционного управления VTR2. Режимы пульта дистанционного управления (1, 2 и 3) используются для отличия данной видеокамеры от других КВМ фирмы Sony во избежание неправильной работы дистанционного управления. Если Вы используете другой КВМ фирмы Sony, работающий в режиме VTR2, мы рекомендуем Вам изменить режим пульта дистанционного управления или закрыть дистанционный датчик КВМ черной бумагой.

Для подготовки пульта дистанционного управления

Вставьте две батарейки R6 (размером AA) согласуя знаки + и – на батарейках со схемой внутри батарейного отсека.

RMT-708



Примечание к сроку службы батареек
Батареек для пульта дистанционного управления хватает приблизительно на 6 месяцев при нормальных условиях эксплуатации. Когда батарейки станут слабыми или полностью разрядятся, пульт дистанционного управления не будет работать.

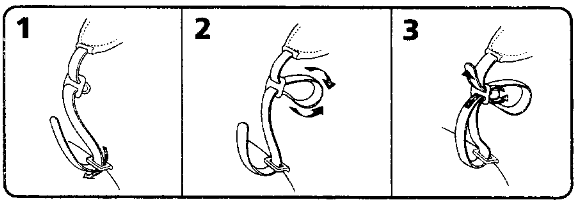
Во избежание повреждения из-за возможной утечки из батареек.
Удалите батарейки, если Вы не будете использовать пульт дистанционного управления в течение длительного времени.

Attaching the shoulder strap

Attach the supplied shoulder strap to the hooks for the shoulder strap .

Прикрепление плечевого ремня

Прикрепите прилагаемый плечевой ремень к скобам для плечевого ремня.



To watch the demonstration

You can start the demonstration by setting DEMO MODE in the menu system.
You can also start the demonstration by the following operation.
When NIGHTSHOT is set to ON, you cannot watch the demonstration (CCD-TR511E/TR640E/TR840E/TR845E only).

To enter demo mode
(1) Eject the cassette and set the POWER switch to PLAYER.
(2) Turn STANDBY up to STANDBY.
(3) While holding down ► set the POWER switch to CAMERA.

To exit demo mode
(1) Set the POWER switch to PLAYER.
(2) Turn STANDBY up to STANDBY.
(3) While holding down ■ set the POWER switch to CAMERA.

Для просмотра демонстрации

Вы можете начать демонстрацию с помощью установки DEMO MODE в системе меню.
Вы также можете начать демонстрацию, выполнив следующую операцию.
Если индикация NIGHTSHOT установлена в положение ON, Вы не сможете наблюдать демонстрацию (только CCD-TR511E/TR640E/TR840E/TR845E).

Для ввода демонстрационного режима
(1) Удалите кассету и установите выключатель POWER в положение PLAYER.
(2) Поверните STANDBY вверх в положение STANDBY.
(3) Нажимая вниз ►, установите выключатель POWER в положение CAMERA.

Для выхода из демонстрационного режима
(1) Удалите кассету и установите выключатель POWER в положение PLAYER.
(2) Поверните STANDBY вверх в положение STANDBY.
(3) Удерживая ■ внизу, установите выключатель POWER в положение CAMERA.

Identifying the parts / Опознавание частей

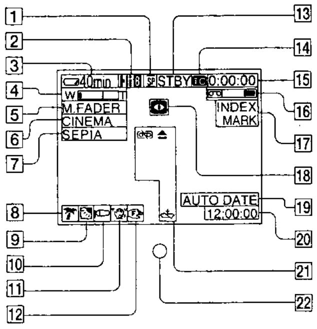
Note on the intelligent accessory shoe –CCD-TR840E/TR845E only
Supplies power to optional accessories such as a video light or microphone. The intelligent accessory shoe is linked to the STANDBY switch, allowing you to turn on and off the power supplied by the shoe. Refer to the instruction manual of the accessory for further information.
To connect an accessory, press down and push it to the end, and then tighten the screw. To remove an accessory, loosen the screw, and then press down and pull out the accessory.
If the camcorder does not work correctly with using the AC power adaptor, use the battery pack.

Примечание к башмаку для установки вспомогательного оборудования – Только CCD-TR840E/TR845E
Подает питание на дополнительное вспомогательное оборудование, как например видеофонарь или микрофон. Башмак для установки вспомогательного оборудования связан с переключателем STANDBY, что позволяет Вам включать и выключать питание, подаваемое через башмак. Смотрите инструкцию по эксплуатации вспомогательного оборудования для получения дальнейшей информации. Для подсоединения вспомогательного оборудования нажмите его вниз и задвиньте до конца, а затем затяните винт. Для снятия вспомогательного оборудования отпустите винт, а затем нажмите вниз и вытащите вспомогательное оборудование.
Если видеокамера не работает надлежащим образом с использованием сетевого адаптера переменного тока, используйте батарейный блок.

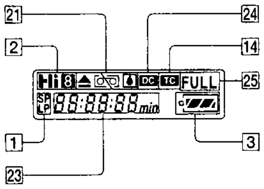
Identifying the parts / Опознавание частей

Operation indicators / Рабочие индикаторы

Viewfinder/Видоискатель



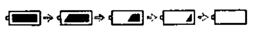
Display window/Окошко дисплея



1 **Recording mode indicator** (p. 37)

2 **Playing back or recording in Hi8 format** (CCD-TR840E/TR845E only) (p. 79)

3 **Remaining battery time indicator**



4 **Exposure indicator** (CCD-TR511E/TR640E/TR840E/TR845E only) (p. 53)/**Zoom indicator** (p. 17)

5 **FADER indicator** (CCD-TR511E/TR640E/TR840E/TR845E only) (p. 42)

6 **Wide mode indicator** (p. 46)

7 **PICTURE EFFECT indicator** (p. 52)

8 **PROGRAM AE indicator** (p. 48)

9 **Backlight indicator** (p. 40)

10 **WIND indicator** (CCD-TR840E/TR845E only) (p. 37)

11 **SteadyShot off indicator** (CCD-TR640E/TR840E/TR845E only) (p. 62)

12 **Manual focusing** (CCD-TR511E/TR640E/TR840E/TR845E only) (p. 49)

13 **Video control mode** (p. 14)

14 **Time code indicator** (CCD-TR845E only) (p. 71)

1 **Индикатор рабочего режима** (стр. 37)

2 **Воспроизведение или запись в формате Hi8** (только TR840E/TR845E) (стр. 79)

3 **Индикатор оставшегося времени заряда батарейного блока**

4 **Индикатор экспозиции** (только CCD-TR511E/TR640E/TR840E/TR845E) (стр. 53)/ **Индикатор трансфокатора** (стр. 17)

5 **Индикатор FADER** (только CCD-TR511E/TR640E/TR840E/TR845E) (стр. 42)

6 **Индикатор широкоформатного режима** (стр. 46)

7 **Индикатор PICTURE EFFECT** (стр. 52)

8 **Индикатор PROGRAM AE** (стр. 48)

9 **Индикатор задней подсветки** (стр. 40)

10 **Индикатор WIND** (только CCD-TR840E/TR845E) (стр. 37)

11 **Индикатор устойчивой съемки** (только CCD-TR640E/TR840E/TR845E) (стр. 62)

12 **Ручная фокусировка** (только CCD-TR511E/TR640E/TR840E/TR845E) (стр. 50)

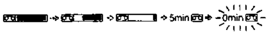
13 **Режим видеоконтроля** (стр. 14)

14 **Индикатор временного кода** (только CCD-TR845E) (стр. 71)

Identifying the parts / Опознавание частей

15 **Tape counter** (p. 16)/**RC time code indicator** (CCD-TR845E only) (p. 71)/**Self-diagnosis functions indicator** (p. 98)/**5SEC mode indicator** (p. 19)

16 **Remaining tape indicator**



17 **Index indicator** (p. 66)/**Date search/Date scan indicator** (p. 63)/**TIME CODE WRITE indicator** (p. 71)/**ZERO MEM indicator** (CCD-TR845E only) (p. 65)

18 **NIGHTSHOT indicator** (CCD-TR511E/TR640E/TR840E/TR845E only) (p. 44)

19 **AUTO DATE indicator** (CCD-TR411E/TR412E/TR511E/TR640E/TR840E only) (p. 13)/**Date indicator** (p. 60)/**Data Cord indicator** (CCD-TR845E only) (p. 30)

20 **Time indicator** (p. 60)

21 **Warning indicators** (p. 114)

22 **Recording lamp** (p. 14)

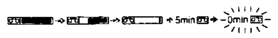
23 **Date or time indicator** (p. 60)/ **Tape counter indicator** (p. 16)/ **RC time code indicator** (CCD-TR845E only) (p. 71)/**Self-diagnosis functions indicator** (p. 98)/**Remaining battery time indicator**

24 **Data Code indicator** (CCD-TR845E only) (p. 30)

25 **FULL charge indicator** (p. 9)

15 **Индикатор счетчика ленты** (стр. 16)/ **временного кода RC** (только CCD-TR845E) (стр. 71)/**Индикатор функции самодиагностики** (стр. 99)/**Индикатор режима 5SEC** (стр. 19)

16 **Индикатор оставшейся ленты**



17 **Индикатор индексного сигнала** (стр. 66)/ **индикатор поиска даты** (стр. 63)/ **сканирования даты/индикатор TIME CODE WRITE** (стр. 71)/**индикатор ZERO MEM** (тольк CCD-TR845E) (стр. 65)

18 **Индикатор NIGHTSHOT** (только CCD-TR511E/TR640E/TR840E/TR845E) (стр. 44)

19 **Индикатор AUTO DATE** (только CCD-TR411E/TR412E/TR511E/TR640E/TR840E) (стр. 13)/**Индикатор даты** (стр. 60)/ **Индикатор кода данных** (только CCD-TR845E) (стр. 30)

20 **Индикатор времени** (стр. 60)

21 **Предупреждающие индикаторы** (стр. 114)

22 **Лампочка записи** (стр. 14)

23 **Индикатор даты или времени** (стр. 60)/ **Индикатор счетчика ленты** (стр. 16)/ **Индикатор временного кода RC** (только CCD-TR845E) (стр. 71)/**Индикатор функции** (стр. 99)//**Индикатор времени оставшегося заряда батарейного блока**

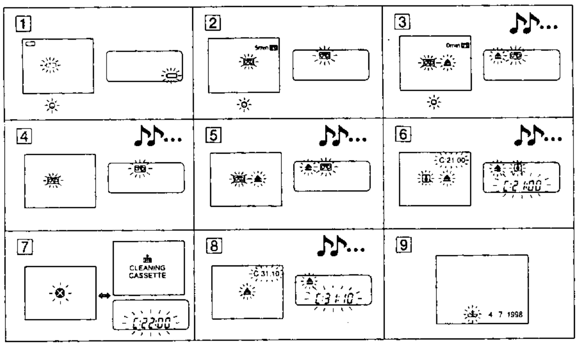
24 **Индикатор кода данных** (только CCD-TR845E) (стр. 30)

25 **Индикатор зарядки FULL** (стр. 9)

Warning indicators / Предупреждающие индикаторы

If indicators flash in the viewfinder or in the display window, check the following:
♪♪... : you can hear the beep sound when the BEEP is set to ON.

Если индикаторы мигают или предупреждающие сообщения появляются на экране ЖКД или в видоискателе, то проверьте следующее:
♪♪... :Вы можете слышать зуммерный звуковой сигнал, когда функция BEEP установлена на ON в системе меню.



1 **The battery is weak or dead.**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 **The tape is near the end.**
The flashing is slow.

3 **The tape has run out.**
The flashing becomes rapid.

4 **No tape has been inserted.**

5 **The tab on the tape is out (red).**

6 **Moisture condensation has occurred.**

7 **The video heads may be contaminated.**

8 **Some other trouble has occurred.**
Use the self-diagnosis function (p. 98).
If the display does not disappear contact your Sony dealer or local authorized Sony service facility.

9 **The lithium battery is weak or is not installed.**

1 **Батарейный блок слабый или полностью разряженный**
Медленное мигание: Батарейный блок слабый.
Быстрое мигание: Батарейный блок полностью разряженный.

2 **Лента приближается к концу.**
Медленное мигание.

3 **Лента закончилась.**
Мигание становится быстрым.

4 **Лента не вставлена.**

5 **На кассете нет лепестка (красная метка).**

6 **Произошла конденсация влаги.**

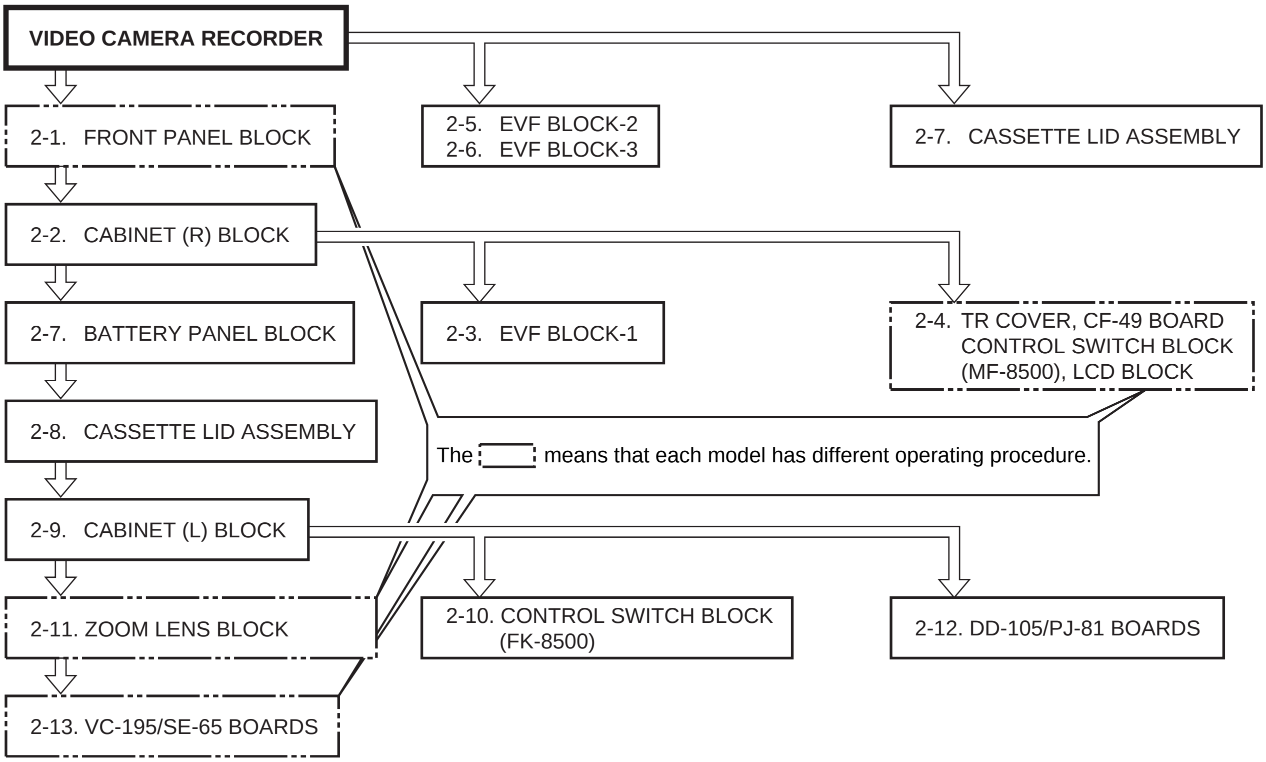
7 **Видеоголовки возможно загрязнены.**

8 **Имеется какая-либо другая проблема.**
Используйте функцию самодиагностики (стр. 99).
Если дисплей не исчезает, то свяжитесь с Вашим дилером Sony или местным уполномоченным предприятием

9 **Литиевая батарейка слабая или не установлена.**

SECTION 2
DISASSEMBLY

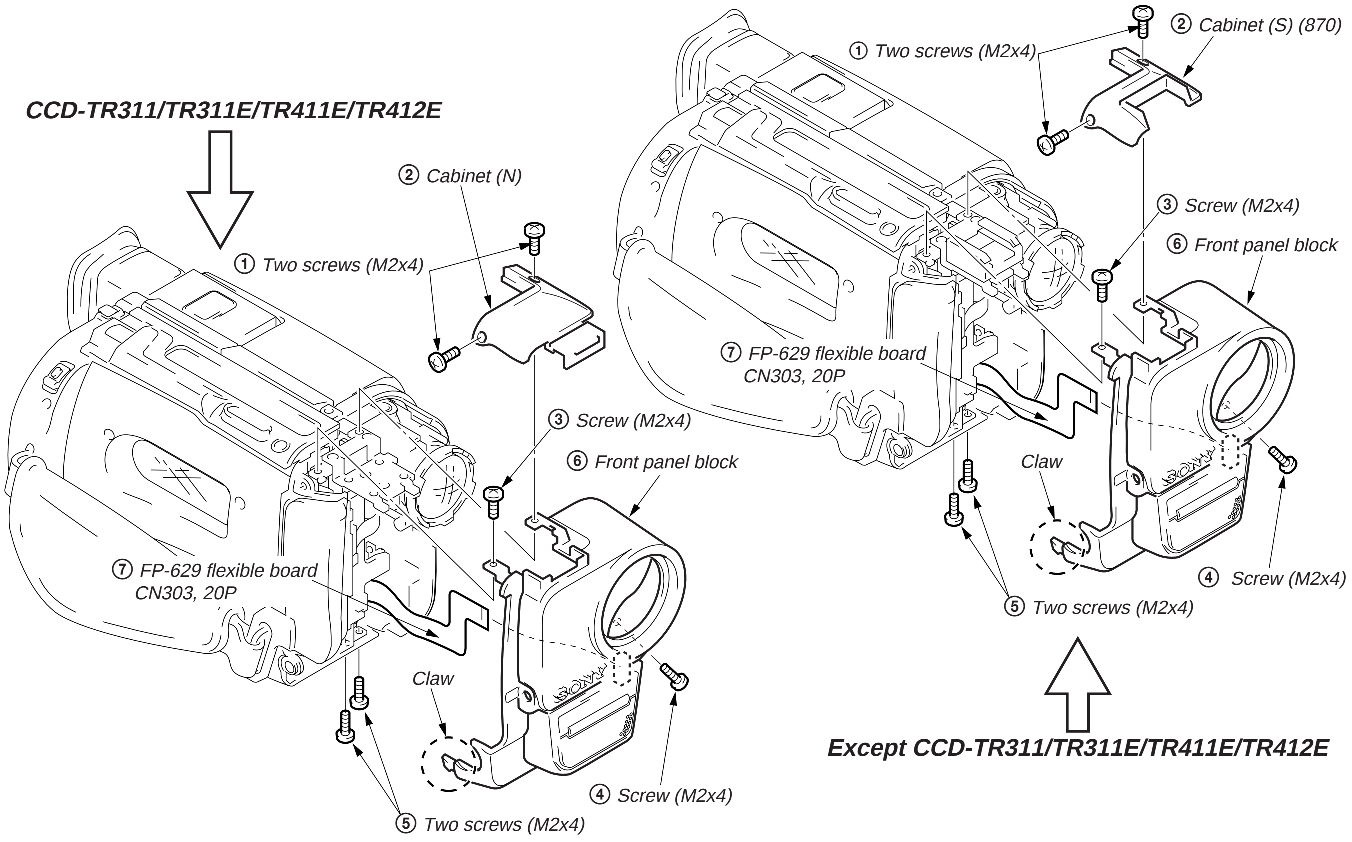
The equipment can be removed using the following procedure.


VIDEO CAMERA RECORDER
2-1. FRONT PANEL BLOCK
2-5. EVF BLOCK-2
2-6. EVF BLOCK-3
2-7. CASSETTE LID ASSEMBLY
2-2. CABINET (R) BLOCK
2-7. BATTERY PANEL BLOCK
2-3. EVF BLOCK-1
2-4. TR COVER, CF-49 BOARD CONTROL SWITCH BLOCK (MF-8500), LCD BLOCK
2-8. CASSETTE LID ASSEMBLY
2-9. CABINET (L) BLOCK
2-11. ZOOM LENS BLOCK
2-10. CONTROL SWITCH BLOCK (FK-8500)
2-12. DD-105/PJ-81 BOARDS
2-13. VC-195/SE-65 BOARDS

The ⁞ ⁞ means that each model has different operating procedure.

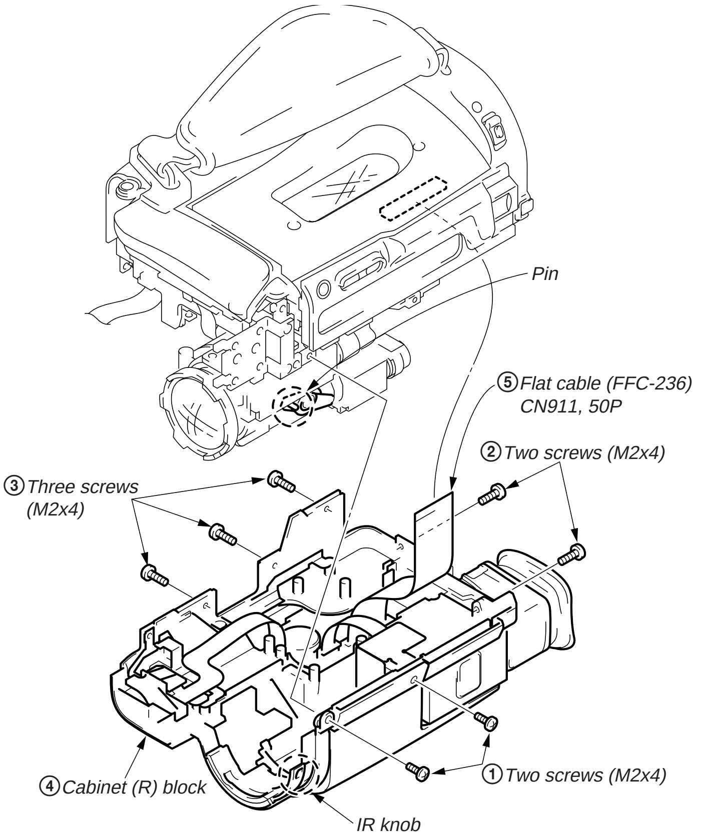
NOTE : Follow the disassembly procedure in the numerical order given.

2-1. REMOVAL OF FRONT PANEL BLOCK


CCD-TR311/TR311E/TR411E/TR412E
② Cabinet (N)
① Two screws (M2x4)
③ Screw (M2x4)
⑥ Front panel block
⑦ FP-629 flexible board CN303, 20P
Claw
④ Screw (M2x4)
⑤ Two screws (M2x4)
② Cabinet (S) (870)
① Two screws (M2x4)
③ Screw (M2x4)
⑥ Front panel block
⑦ FP-629 flexible board CN303, 20P
Claw
④ Screw (M2x4)
⑤ Two screws (M2x4)
Except CCD-TR311/TR311E/TR411E/TR412E

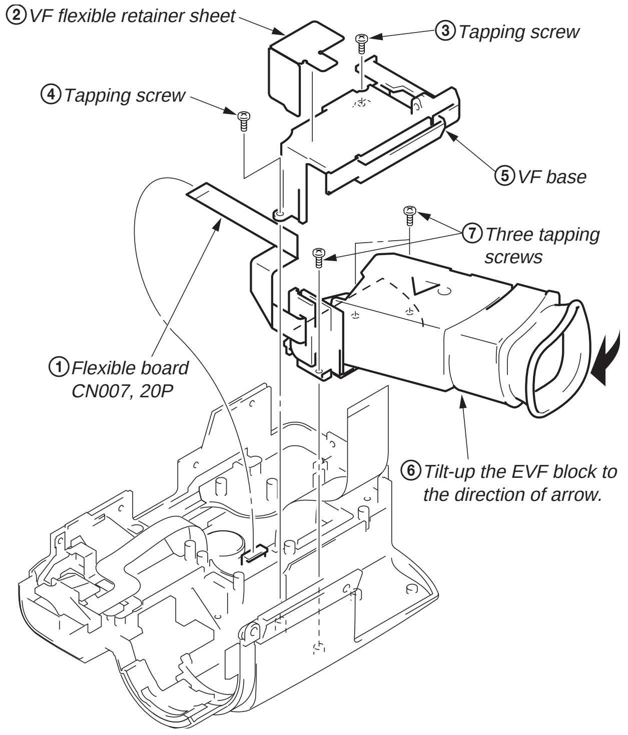
2-2. REMOVAL OF CABINET (R) BLOCK

Note : *Be sure to that the pin of the Lens assembly is put into the hole of the IR knob when attaching.*
(CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E)



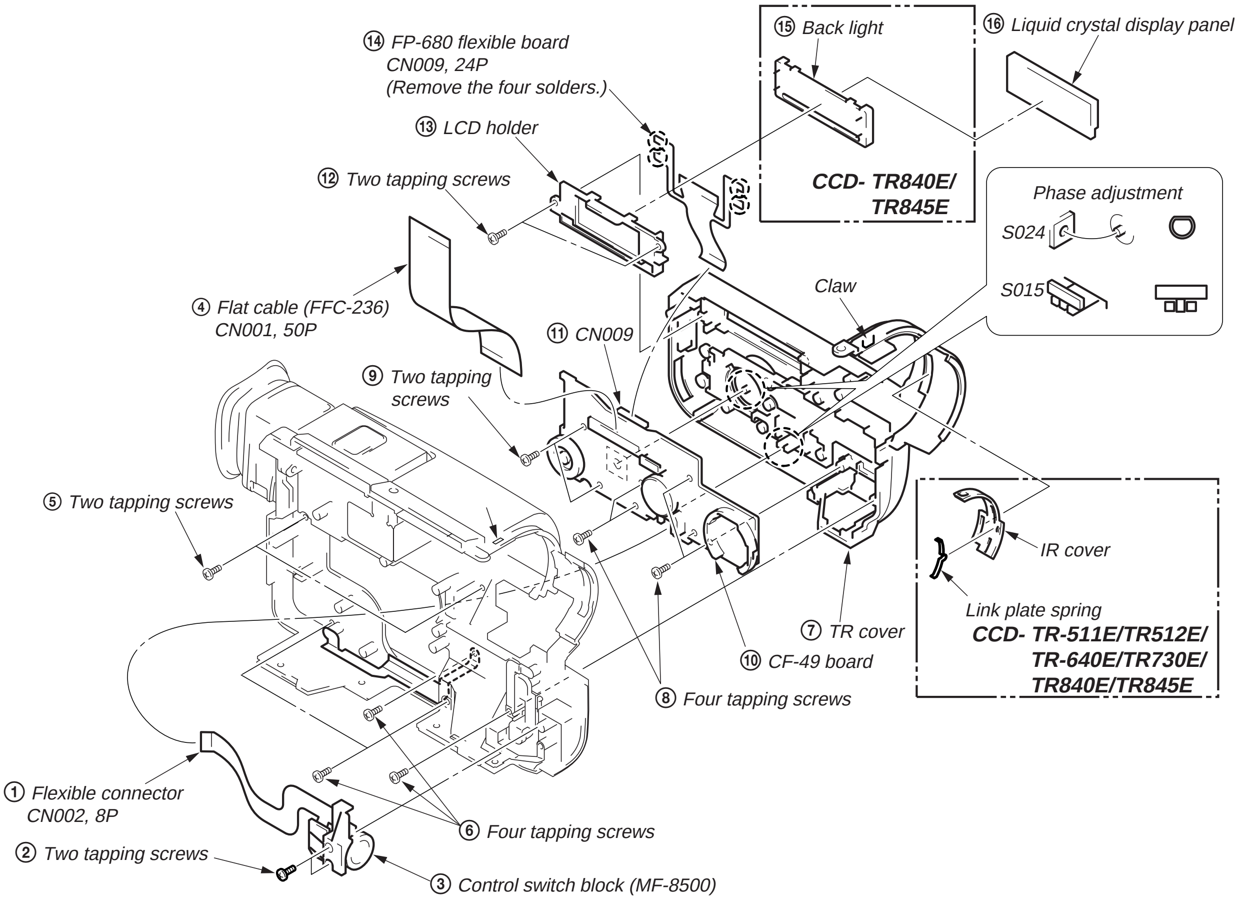
Pin
⑤ Flat cable (FFC-236) CN911, 50P
② Two screws (M2x4)
③ Three screws (M2x4)
④ Cabinet (R) block
① Two screws (M2x4)
IR knob

2-3. REMOVAL OF EVF BLOCK-1



② VF flexible retainer sheet
③ Tapping screw
④ Tapping screw
⑤ VF base
⑦ Three tapping screws
① Flexible board CN007, 20P
⑥ Tilt-up the EVF block to the direction of arrow.

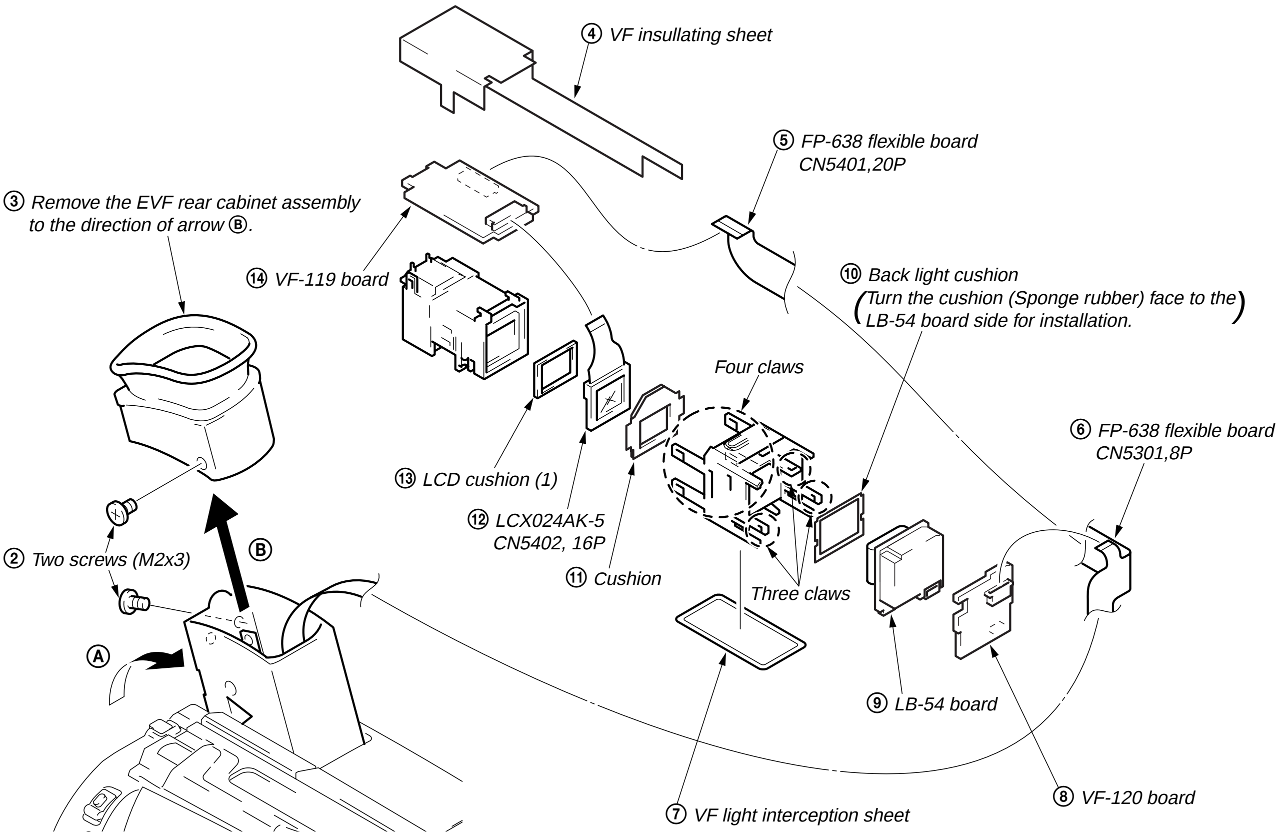
2-4. REMOVAL OF TR COVER, CF-49 BOARD AND LCD BLOCK



⑭ FP-680 flexible board CN009, 24P (Remove the four solders.)
⑮ Back light
⑯ Liquid crystal display panel
⑬ LCD holder
⑫ Two tapping screws
CCD- TR840E/ TR845E
Phase adjustment
S024
S015
Claw
④ Flat cable (FFC-236) CN001, 50P
⑪ CN009
⑨ Two tapping screws
⑤ Two tapping screws
IR cover
Link plate spring
CCD- TR-511E/TR512E/ TR-640E/TR730E/ TR840E/TR845E
⑦ TR cover
⑩ CF-49 board
⑧ Four tapping screws
① Flexible connector CN002, 8P
⑥ Four tapping screws
② Two tapping screws
③ Control switch block (MF-8500)

2-5. REMOVAL OF EVF BLOCK-2 (LB-54, VF-119 AND VF-120 BOARDS)

① Tilt-up the EVF block to the direction of arrow Ⓐ.

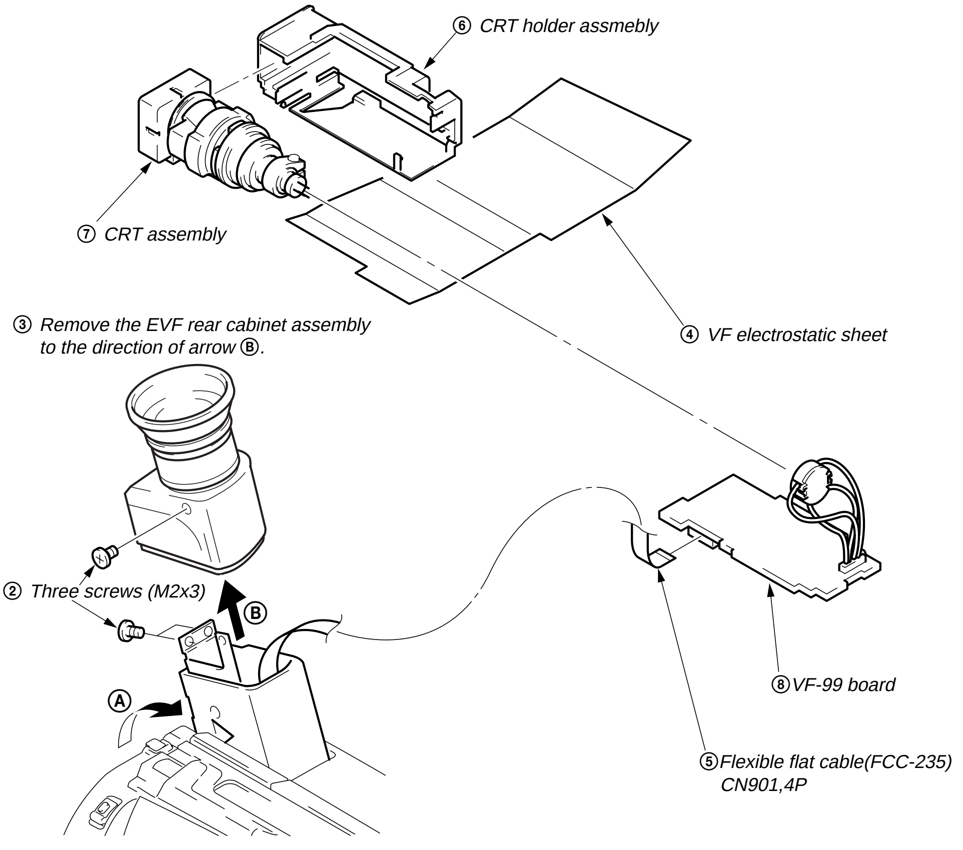


② Two screws (M2x3)

③ Remove the EVF rear cabinet assembly to the direction of arrow Ⓑ.

④ VF insullating sheet
⑤ FP-638 flexible board CN5401,20P
⑥ FP-638 flexible board CN5301,8P
⑦ VF light interception sheet
⑧ VF-120 board
⑨ LB-54 board
⑩ Back light cushion (Turn the cushion (Sponge rubber) face to the LB-54 board side for installation.)
⑪ Cushion
⑫ LCX024AK-5 CN5402, 16P
⑬ LCD cushion (1)
⑭ VF-119 board
Four claws
Three claws
Ⓐ
Ⓑ

2-6. REMOVAL OF EVF BLOCK-3 (VF-99 BOARD)



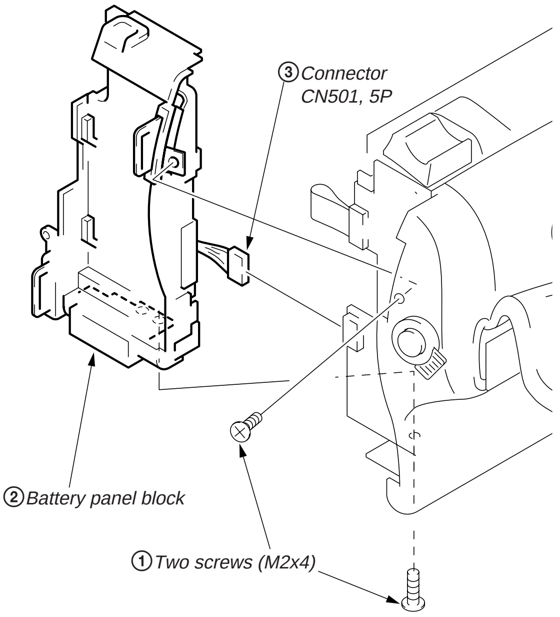
③ Remove the EVF rear cabinet assembly to the direction of arrow Ⓑ.

② Three screws (M2x3)

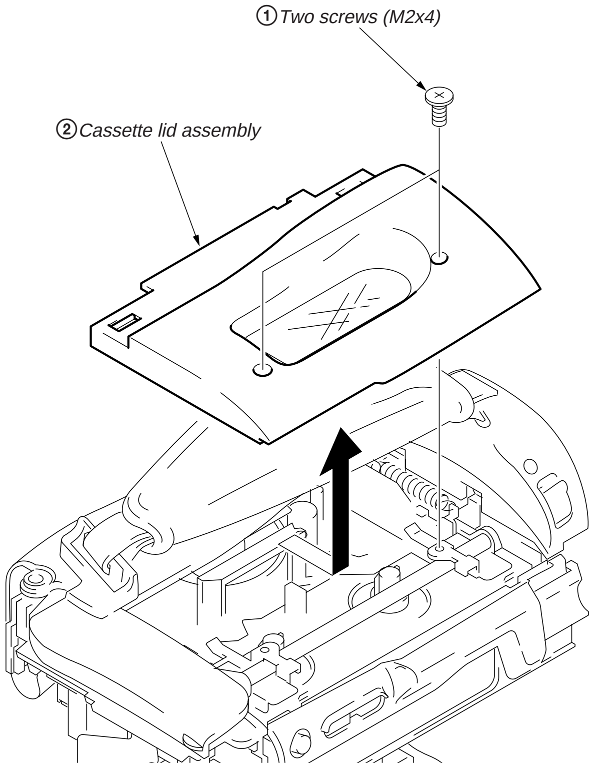
⑥ CRT holder assmebly
⑦ CRT assembly
④ VF electrostatic sheet
⑧VF-99 board
⑤Flexible flat cable(FCC-235) CN901,4P
Ⓐ
Ⓑ

① Tilt-up the EVF block to the direction of arrow Ⓐ.

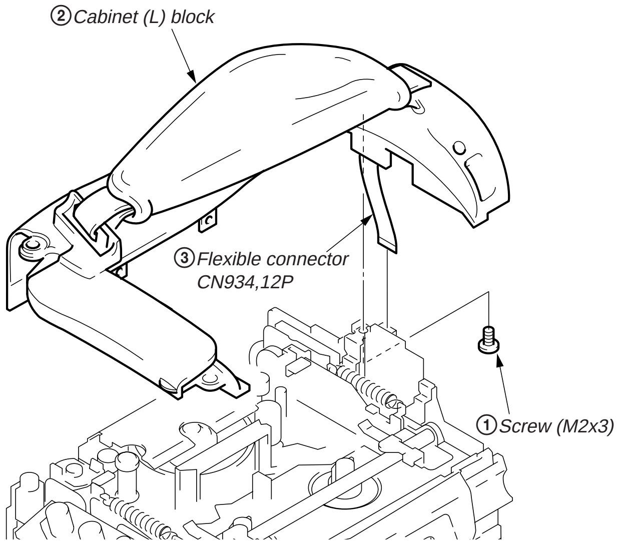
2-7. REMOVAL OF BATTERY PANEL BLOCK


③Connector
CN501, 5P
②Battery panel block
①Two screws (M2x4)

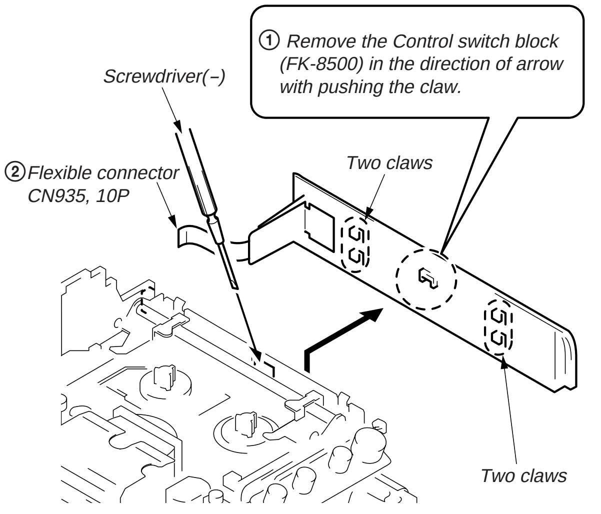
2-8. REMOVAL OF CASSETTE LID ASSEMBLY


①Two screws (M2x4)
②Cassette lid assembly

2-9. REMOVAL OF CABINET (L) BLOCK

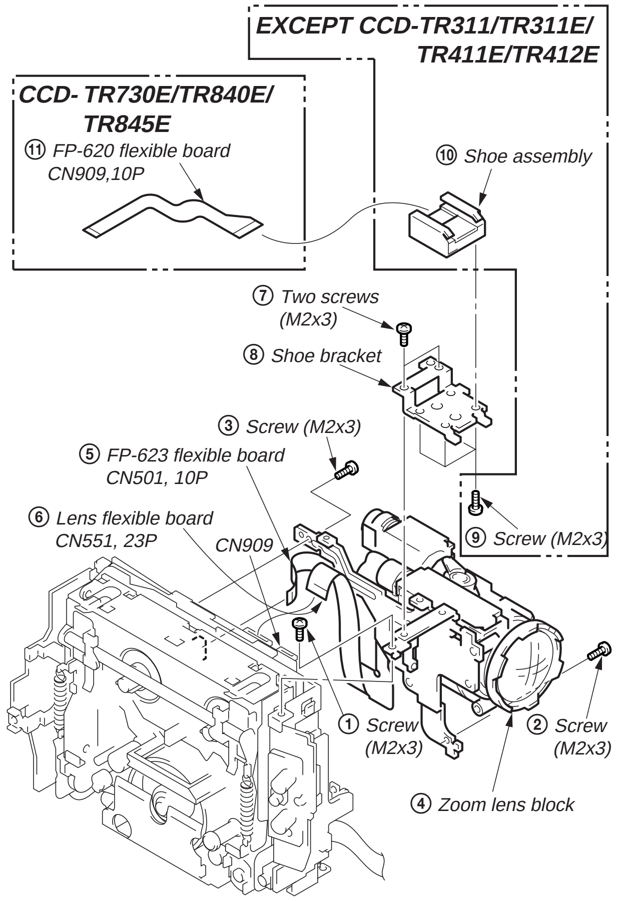

②Cabinet (L) block
③Flexible connector
CN934,12P
①Screw (M2x3)

2-10. REMOVAL OF CONTROL SWITCH BLOCK (FK-8500)

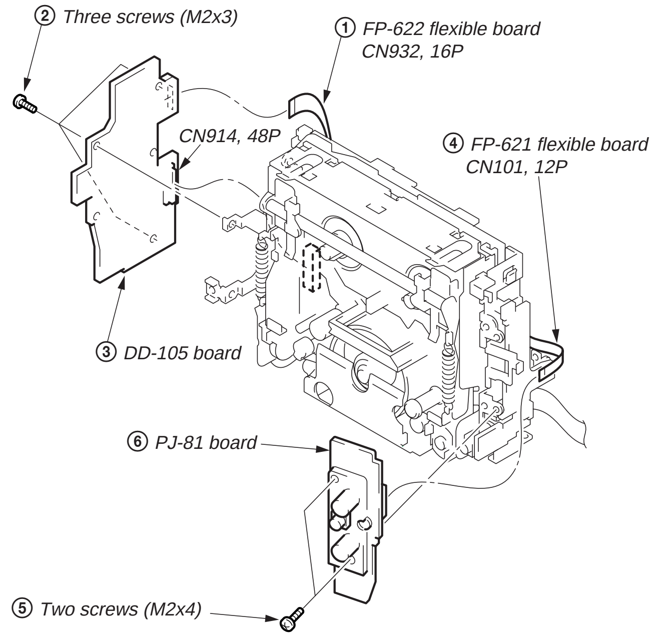

① Remove the Control switch block (FK-8500) in the direction of arrow with pushing the claw.

Screwdriver(−)
②Flexible connector
CN935, 10P
Two claws
Two claws

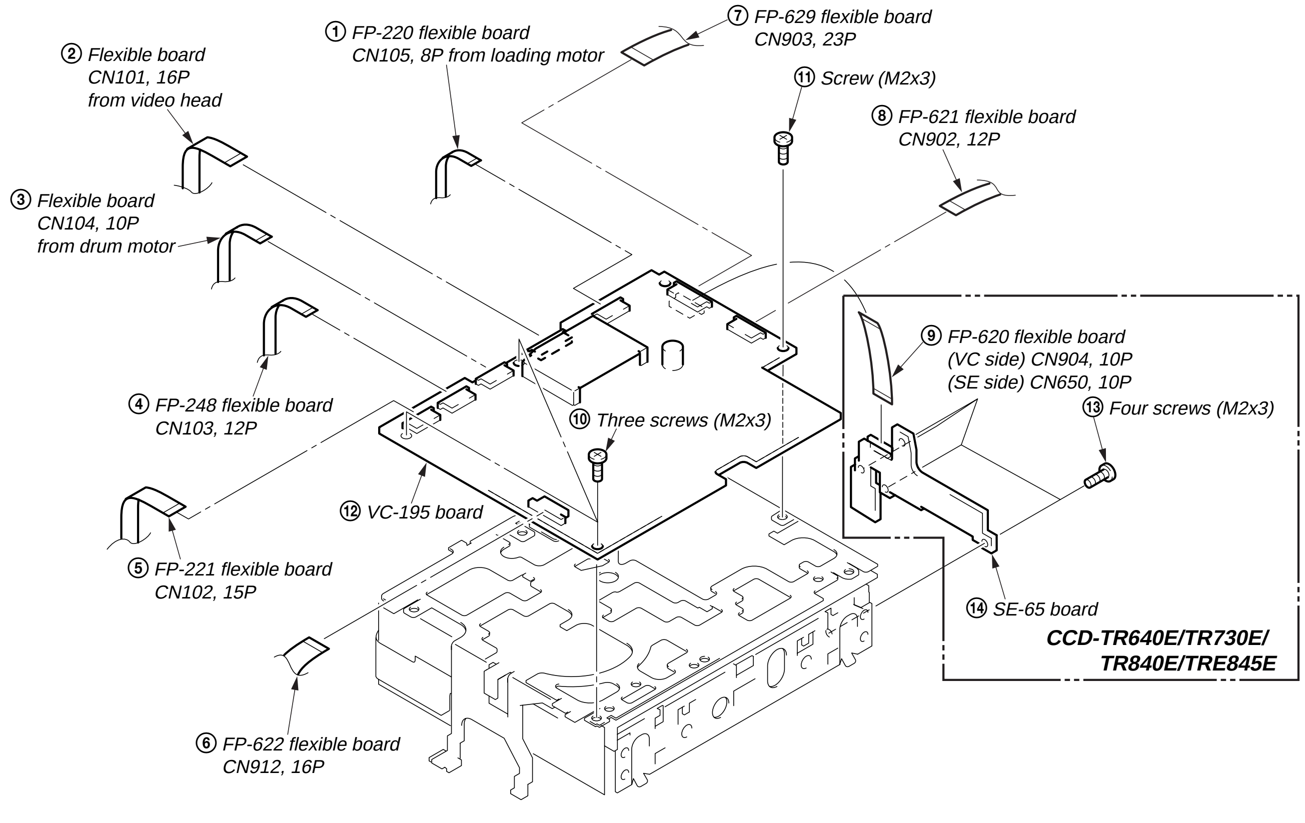
2-11. REMOVAL OF ZOOM LENS BLOCK


EXCEPT CCD-TR311/TR311E/
TR411E/TR412E
CCD- TR730E/TR840E/
TR845E
⑪ FP-620 flexible board
CN909,10P
⑩ Shoe assembly
⑦ Two screws
(M2x3)
⑧ Shoe bracket
③ Screw (M2x3)
⑤ FP-623 flexible board
CN501, 10P
⑥ Lens flexible board
CN551, 23P
CN909
⑨ Screw (M2x3)
① Screw
(M2x3)
② Screw
(M2x3)
④ Zoom lens block

2-12. REMOVAL OF DD-105 AND PJ-81 BOARDS

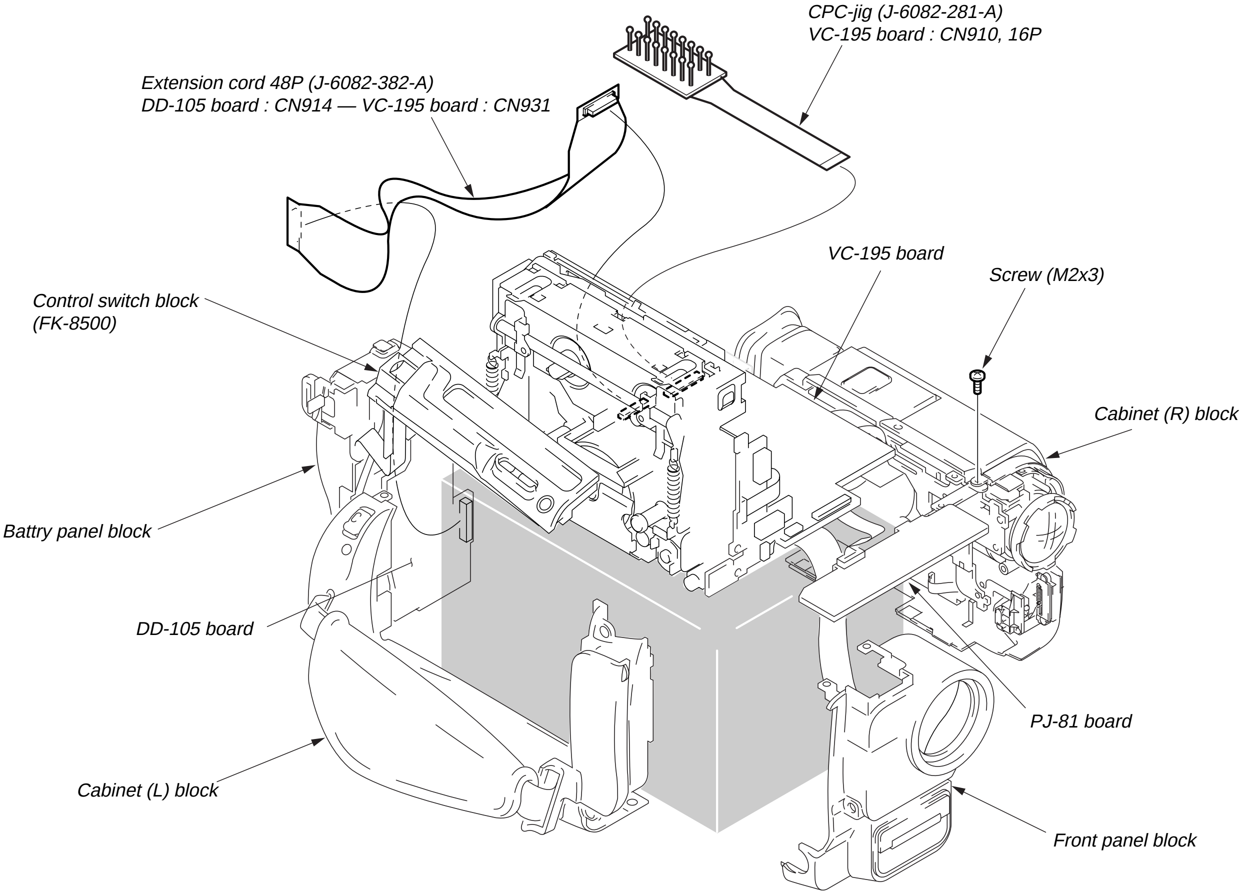

② Three screws (M2x3)
① FP-622 flexible board
CN932, 16P
CN914, 48P
④ FP-621 flexible board
CN101, 12P
③ DD-105 board
⑥ PJ-81 board
⑤ Two screws (M2x4)

2-13. REMOVAL OF VC-195 AND SE-65 BOARDS

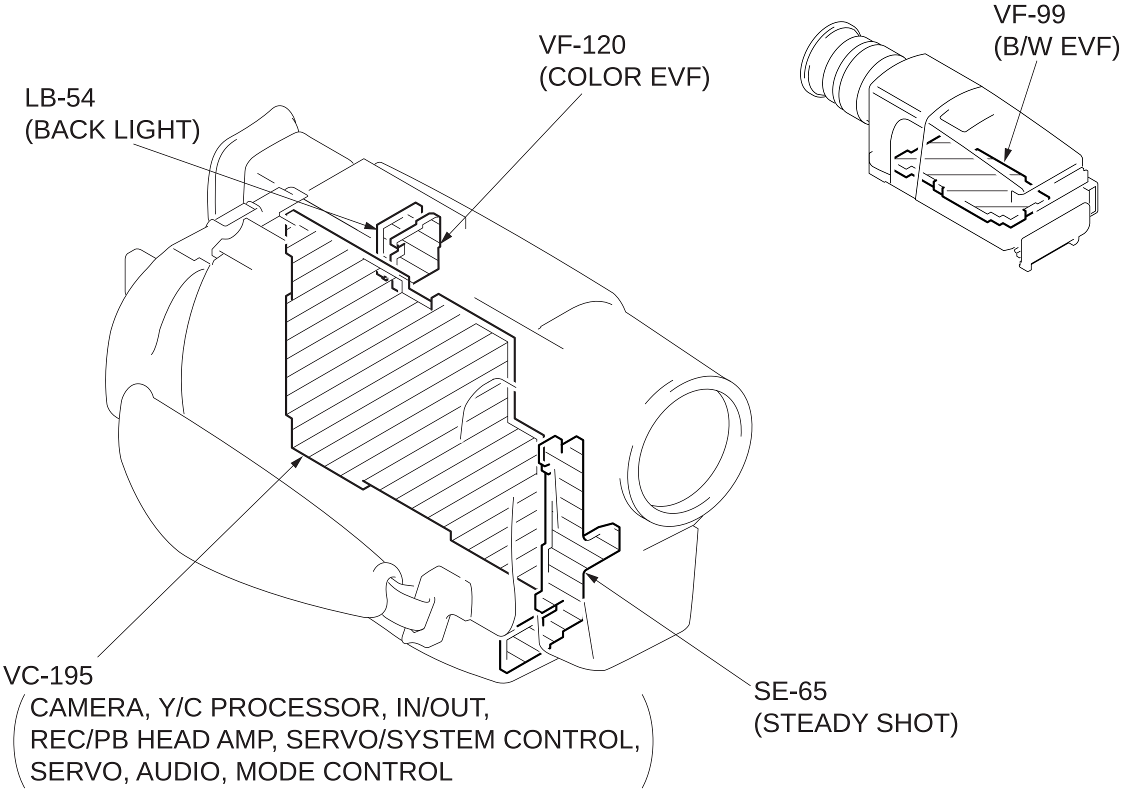

① FP-220 flexible board
CN105, 8P from loading motor
⑦ FP-629 flexible board
CN903, 23P
② Flexible board
CN101, 16P
from video head
⑪ Screw (M2x3)
⑧ FP-621 flexible board
CN902, 12P
③ Flexible board
CN104, 10P
from drum motor
⑨ FP-620 flexible board
(VC side) CN904, 10P
(SE side) CN650, 10P
⑬ Four screws (M2x3)
④ FP-248 flexible board
CN103, 12P
⑩ Three screws (M2x3)
⑫ VC-195 board
⑤ FP-221 flexible board
CN102, 15P
⑭ SE-65 board
CCD-TR640E/TR730E/
TR840E/TRE845E
⑥ FP-622 flexible board
CN912, 16P

2-14. SERVICE POSITION

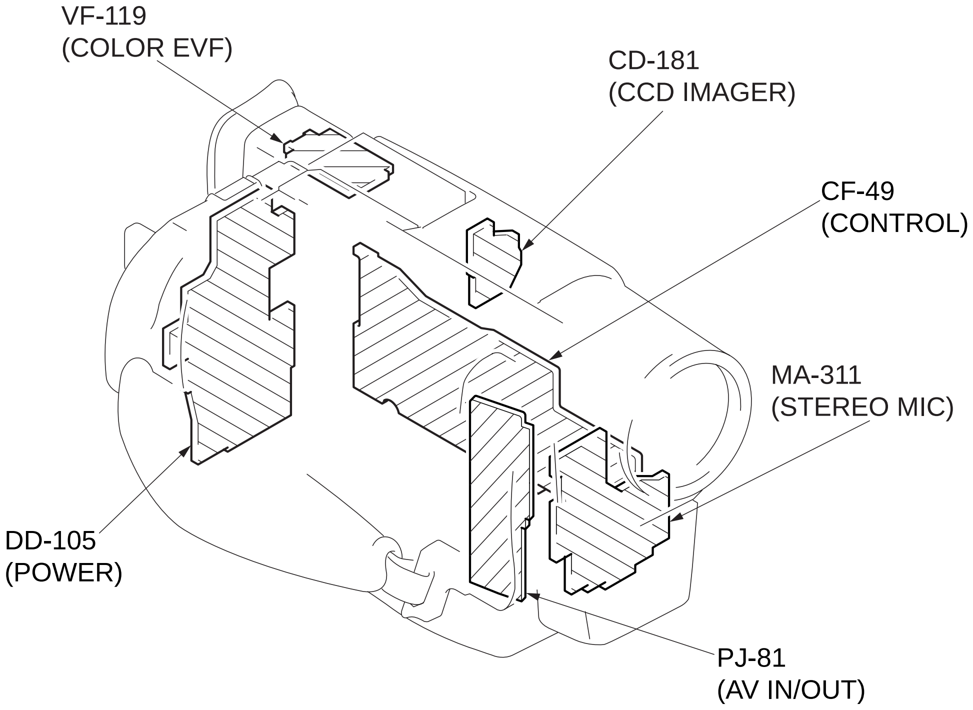
Preparation : *Refer to previous section “DISASSEMBLY”, and connect as shown in the figure after each parts has been removed.*


CPC-jig (J-6082-281-A)
VC-195 board : CN910, 16P
Extension cord 48P (J-6082-382-A)
DD-105 board : CN914 — VC-195 board : CN931
VC-195 board
Screw (M2x3)
Control switch block
(FK-8500)
Cabinet (R) block
Battry panel block
DD-105 board
PJ-81 board
Cabinet (L) block
Front panel block

2-15. CIRCUIT BOARDS LOCATION



VF-99
(B/W EVF)
VF-120
(COLOR EVF)
LB-54
(BACK LIGHT)
VC-195
CAMERA, Y/C PROCESSOR, IN/OUT,
REC/PB HEAD AMP, SERVO/SYSTEM CONTROL,
SERVO, AUDIO, MODE CONTROL
SE-65
(STEADY SHOT)



VF-119
(COLOR EVF)
CD-181
(CCD IMAGER)
CF-49
(CONTROL)
MA-311
(STEREO MIC)
DD-105
(POWER)
PJ-81
(AV IN/OUT)

SECTION 3
BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM

CD-181 BOARD
(SEE PAGE 4-7)
IC401
CCD IMAGER
ZOOM LENS
IRIS METER
M905 FOCUS MOTOR
M906 ZOOM MOTOR
FOCUS SENSOR
ZOOM SENSOR
HALL
VC-195 BOARD
(SEE PAGE 4-18, 21, 25, 29, 33, 37, 40, 43, 47)
IC501
TIMING GENERATOR
IC551
AMP DRIVE
HALL AMP
IC552
FOCUS MOTOR DRIVE
ZOOM MOTOR DRIVE
SE-65 BOARD
(SEE PAGE 4-10)
(STEADY SHOT MODEL)
SE452 YAW SENSOR
SE451 PITCH SENSOR
IC451
SENSOR AMP
J451 HEADPHONE
(STEREO MODEL)
PJ-81 BOARD
(SEE PAGE 4-52)
S VIDEO
J101 TERMINAL BOARD
VIDEO
AUDIO
RFU DC OUT
(Hi8 MODEL)
(STEREO MODEL)
IC151
INPUT/OUTPUT SELECT
IC502
S/H AGC
A/D CONV.
IC202
CAMERA Y/C PROCESS, VTR Y/C PROCESS, ATF, FOCUS/ZOOM MOTOR CONTROL
(TBC&DNR MODEL)
MEMORY
IC204
IC201
CHARACTER GENERATOR
D/A CONVERTER (EVR)
IC152
IC001
REC/PB AMP
FLYING ERASE OSC
EEP ROM
IC401
(MONAURAL MODEL)
J301 MIC (PLUG IN POWER)
MIC901 MIC
IC321
MIC AMP
(STEREO MODEL)
IC322
MIC AMP
IC301
AFM AUDIO PROCESS
(REMOTE COMMANDER MODEL)
IC301
REMOTE COMMANDER RECEIVER
MA-311 BOARD (1/2)
(SEE PAGE 4-54)
INTELLIGENT ACCESSORY SHOE
(INTELLIGENT ACCESSORY SHOE MODEL)
CONTROL SWITCH BLOCK (CF-49) (1/2)
(SEE PAGE 4-60)
VF-119 BOARD
(SEE PAGE 4-72)
(COLOR EVF MODEL)
IC5402
IC5401
LCD DRIVE
TIMING GENERATOR
IC5404
LCD PANEL
VF-99 BOARD
(SEE PAGE 4-68)
T901
CRT DRIVE
IC901
V901 CRT
(B/W EVF MODEL)
VF-120 BOARD
(SEE PAGE 4-76)
IC5301
DC/DC CONVERTER BACK LIGHT DRIVE
LB-54 BOARD
(SEE PAGE 4-77)
ND5301 BACK LIGHT
B-MECHA CHASSIS
(SEE PAGE 4-40)
FLYING ERASE
FP-220 (FLEXIBLE)
M903 LOADING MOTOR
S001 MODE SWITCH
DEW SENSOR
FP-249 (FP-355, 356) (FLEXIBLE)
T REEL FG SENSOR
S REEL FG SENSOR
M901 DRUM MOTOR
DRUM FG PG
M902 CAPSTAN MOTOR
CAPSTAN FG
CAPSTAN MOTOR DRIVE
WAVE SHAPER
IC001
IC452
LOADING MOTOR DRIVE
TAPE TOP DETECT
T REEL FG AMP
S REEL FG AMP
TAPE END DETECT
LED DRIVE
IC451
WAVE SHAPER
DRUM MOTOR DRIVE
IC801
DRUM PWM DRIVE
CAPSTAN PWM DRIVE
DD-105 BOARD (1/2)
(SEE PAGE 4-85)
LPF
IC402
MECHA/CAMERA CONTROL/SERVO
MECHA/CAMERA CONTROL
SERVO
IC701
(TIME CODE MODEL)
MA-311 BOARD (1/2)
(SEE PAGE 4-54)
S302, 303 POWER SWITCH
IC604
MODE CONTROL
IC602
INITIAL RESET BACKUP VCC
BH001 LITHIUM BATTERY
IC603
LANC I/O
CONTROL SWITCH BLOCK (CF-49) (1/2)
(SEE PAGE 4-60)
IC001
LCD INDICATOR DRIVE
LCD INDICATOR
S020 PROGRAM AE
AE DIAL
(MANUAL FOCUS MODEL)
CONTROL SWITCH BLOCK (MF-B500)
(SEE PAGE 4-60)
FOCUS DIAL
CONTROL DIAL
CAMERA FUNCTION SW MENU SW
CONTROL SWITCH BLOCK (SS-B500)
(SEE PAGE 4-54)
CAMERA STANDBY SW
START/STOP SW
EJECT SW
PHOTO FREEZE
PHOTO START
J001 LANC
VTR CONTROL SWITCH BLOCK (FK-B500)
(SEE PAGE 4-54)
VTR FUNCTION SW
ZOOM SW
BATTERY TERMINAL
DC IN
DC/DC CONVERTER
DRUM/CAPSTAN PWM DRIVE
IC801
DD-105 BOARD
(SEE PAGE 4-85)

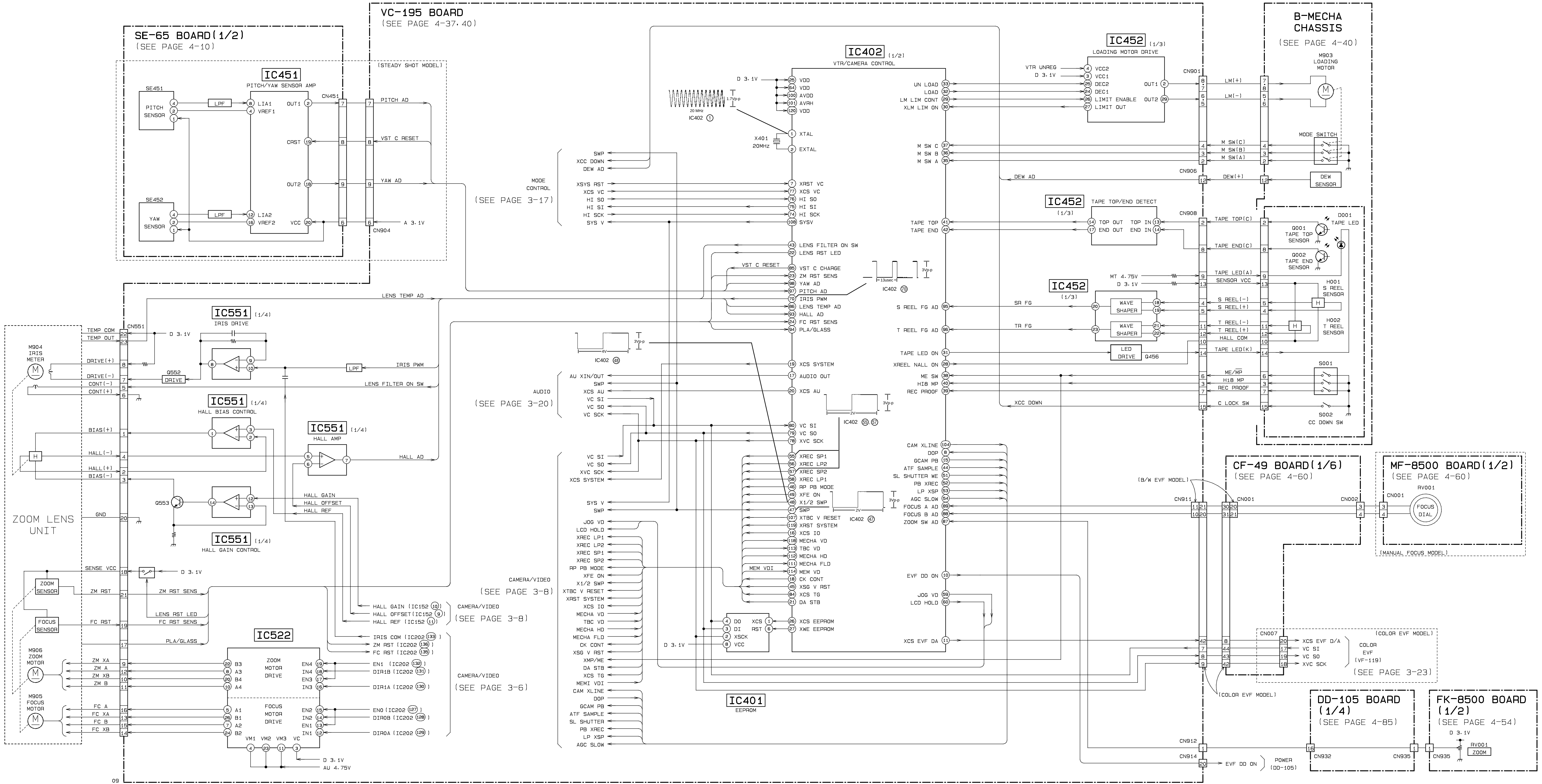
STEADY SHOT MODEL:CCD-TR640E/TR730E/TR840E/TR845E
Hi8 MODEL:CCD-TR840E/TR845E
STEREO MODEL:CCD-TR730E/TR840E/TR845E
MONAURAL MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E
COLOR EVF MODEL:CCD-TR512E/TR730E
B/W EVF MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR640E/TR840E/TR845E
TBC&DNR MODEL:CCD-TR730E/TR840E/TR845E
REMOTE COMMANDER MODEL:CCD-TR412E/TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR730E/TR840E/TR845E
PHOTO MODE MODEL:CCD-TR730E
TIME CODE MODEL:CCD-TR845E
MANUAL FOCUS MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E

3-2. CAMERA/VIDEO BLOCK DIAGRAM

VC-195 BOARD
(SEE PAGE 4-18, 25, 29, 33)
CD-181 BOARD
(SEE PAGE 4-7)
IC401
CCD IMAGER
PJ-81 BOARD(1/3)
(SEE PAGE 4-52)
CF-49 BOARD(1/6)
(SEE PAGE 4-60)
IC501
TIMING GENERATOR
IC502
S/H·AGC·A/D CONVERTER
IC202
CAMERA Y/C PROCESS·
VTR Y/C PROCESS·ATF·FOCUS/ZOOM MOTOR CONTROL
IC151
IC204
MEMORY
IC201
CHARACTER GENERATOR
IC001
REC/PB AMP
IC152
D/A CONVERTER (EVR)
VIDEO HEAD
CH SP1
CH SP2
FLYING ERASE
CAMERA REC
PB
AUDIO
(SEE PAGE 3-19)
SERVO
(SEE PAGE 3-12)
VTR/CAMERA CONTROL
(SEE PAGE 3-9)
MODE CONTROL
(SEE PAGE 3-17)
(SEE PAGE 3-27)
(SEE PAGE 3-23)
TIME CODE MODEL
POWER
(DD-105)
CPC
(FOR CHECK)

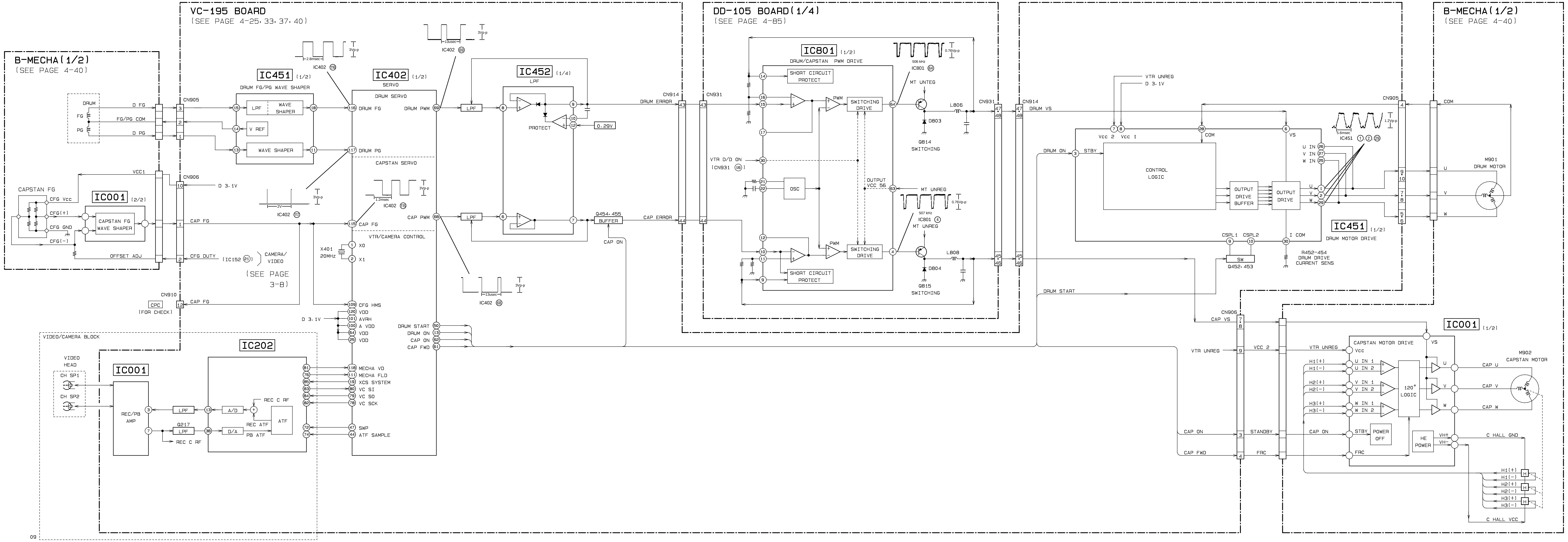
NTSC MODEL:CCD-TR311
PAL MODEL:CCD-TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E/
TR840E/TR845E
CCD 510H MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E
COLOR EVF MODEL:CCD-TR512E/TR730E
B/W EVF MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR640E/
TR840E/TR845E
Hi8 MODEL:CCD-TR840E/TR845E
STANDARD 8 MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/
TR640E/TR730E
VTR REC MODEL:CCD-TR840E(Australian model)
TBC&DNR MODEL:CCD-TR730E/TR840E/TR845E
TIME CODE MODEL:CCD-TR845E

3-3. VTR/CAMERA CONTROL BLOCK DIAGRAM

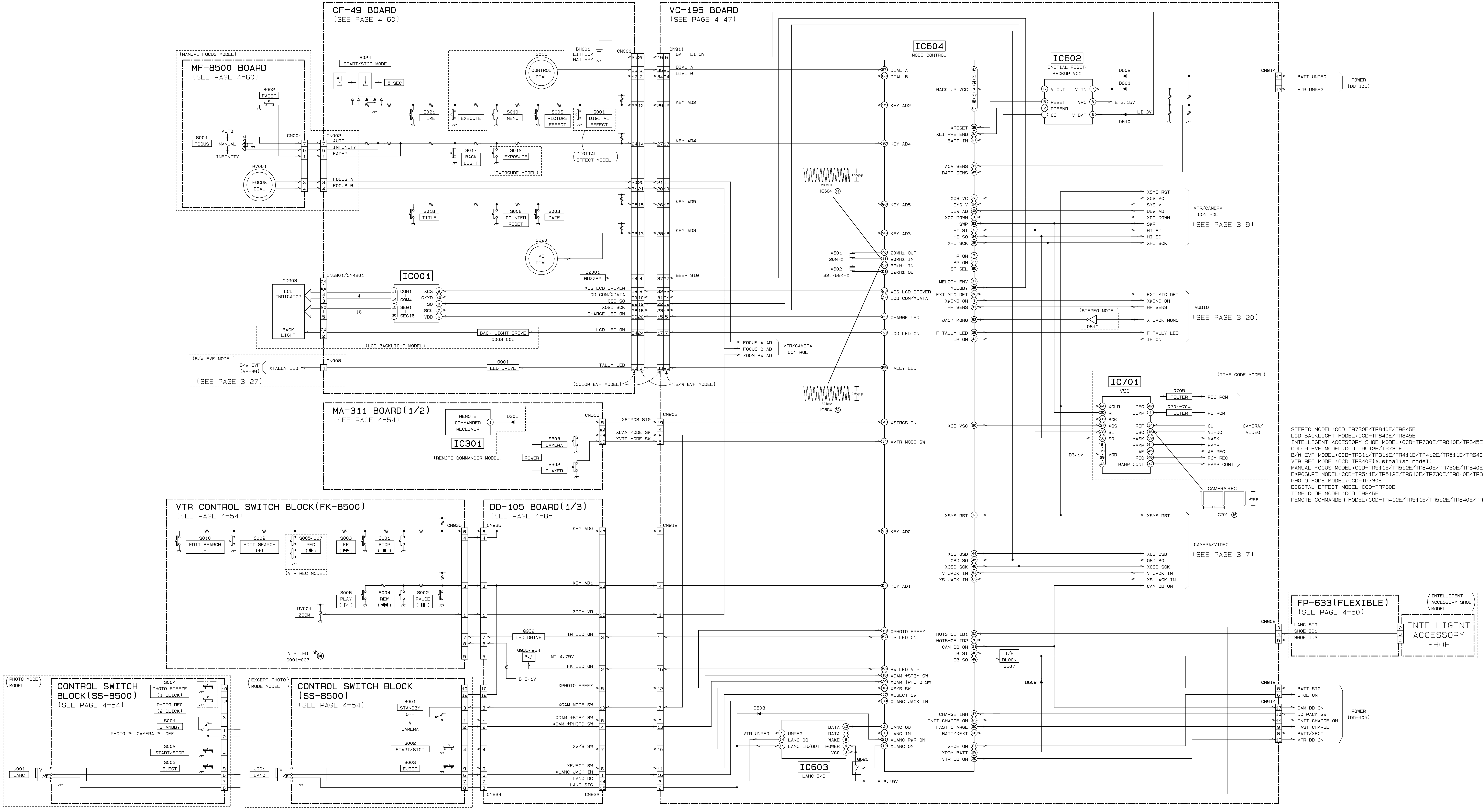

VC-195 BOARD
(SEE PAGE 4-37, 40)
SE-65 BOARD(1/2)
(SEE PAGE 4-10)
(STEADY SHOT MODEL)
IC451
PITCH/YAW SENSOR AMP
SE451
PITCH SENSOR
SE452
YAW SENSOR
CN451
CN904
PITCH AD
VST C RESET
YAW AD
A 3.1V
IC402 (1/2)
VTR/CAMERA CONTROL
X401 20MHz
IC452 (1/3)
LOADING MOTOR DRIVE
IC452 (1/3)
TAPE TOP/END DETECT
IC452 (1/3)
WAVE SHAPER
LED DRIVE
Q456
B-MECHA CHASSIS
(SEE PAGE 4-40)
M903 LOADING MOTOR
MODE SWITCH
DEW SENSOR
D001 TAPE LED
Q001 TAPE TOP SENSOR
Q002 TAPE END SENSOR
H001 S REEL SENSOR
H002 T REEL SENSOR
S001
S002 CC DOWN SW
CN901
CN906
CN908
MODE CONTROL
(SEE PAGE 3-17)
AUDIO
(SEE PAGE 3-20)
CAMERA/VIDEO
(SEE PAGE 3-8)
CAMERA/VIDEO
(SEE PAGE 3-6)
IC551 (1/4)
IRIS DRIVE
IC551 (1/4)
HALL BIAS CONTROL
IC551 (1/4)
HALL AMP
IC551 (1/4)
HALL GAIN CONTROL
Q552 DRIVE
Q553
CN551
ZOOM LENS UNIT
M904 IRIS METER
ZOOM SENSOR
FOCUS SENSOR
M906 ZOOM MOTOR
M905 FOCUS MOTOR
IC522
ZOOM MOTOR DRIVE
FOCUS MOTOR DRIVE
IC401
EEPROM
CF-49 BOARD(1/6)
(SEE PAGE 4-60)
(B/W EVF MODEL)
CN911
CN001
CN002
MF-8500 BOARD(1/2)
(SEE PAGE 4-60)
RV001
FOCUS DIAL
(MANUAL FOCUS MODEL)
CN007
(COLOR EVF MODEL)
COLOR EVF (VF-119)
(SEE PAGE 3-23)
DD-105 BOARD (1/4)
(SEE PAGE 4-85)
CN932
CN935
FK-8500 BOARD (1/2)
(SEE PAGE 4-54)
RV001 ZOOM
CN912
CN914
EVF DD ON
POWER (DD-105)
09

STEADY SHOT MODEL:CCD-TR640E/TR730E/TR840E/TR845E
COLOR EVF MODEL:CCD-TR512E/TR730E
MANUAL FOCUS MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E

3-4. SERVO BLOCK DIAGRAM


B-MECHA(1/2)
(SEE PAGE 4-40)
DRUM
FG
PG
D FG
FG/PG COM
D PG
CAPSTAN FG
CFG Vcc
CFG(+)
CFG GND
CFG(-)
IC001 (2/2)
CAPSTAN FG WAVE SHAPER
VCC1
OFFSET ADJ
VC-195 BOARD
(SEE PAGE 4-25,33,37,40)
CN905
CN906
D 3.1V
CAP FG
CFG DUTY
(IC152 21)
CAMERA/VIDEO
(SEE PAGE 3-8)
CN910
CPC
(FOR CHECK)
IC451 (1/2)
DRUM FG/PG WAVE SHAPER
LPF
WAVE SHAPER
V REF
IC402 (1/2)
SERVO
DRUM SERVO
DRUM FG
DRUM PG
DRUM PWM
CAPSTAN SERVO
CAP FG
CAP PWM
VTR/CAMERA CONTROL
X401 20MHz
X0
X1
CFG HMS
VDD
AVRH
A VDD
D 3.1V
DRUM START
DRUM ON
CAP ON
CAP FWD
MECHA VD
MECHA FLD
XCS SYSTEM
VC SI
VC SO
VC SCK
SWP
ATF SAMPLE
IC452 (1/4)
LPF
PROTECT
0.29V
Q454,455 BUFFER
CAP ON
CN914
DRUM ERROR
CAP ERROR
VIDEO/CAMERA BLOCK
VIDEO HEAD
CH SP1
CH SP2
IC001
REC/PB AMP
IC202
LPF
Q217
A/D
D/A
REC C RF
REC ATF
PB ATF
ATF
09
DD-105 BOARD(1/4)
(SEE PAGE 4-85)
IC801 (1/2)
DRUM/CAPSTAN PWM DRIVE
SHORT CIRCUIT PROTECT
PWM
SWITCHING DRIVE
OSC
OUTPUT VCC 56
VTR D/D ON (CN931 18)
CN931
MT UNREG
Q814 SWITCHING
Q815 SWITCHING
L805
L808
D803
D804
IC801
0.75Vp-p
506 kHz
507 kHz
CN914
DRUM VS
DRUM ON
DRUM START
VTR UNREG
D 3.1V
Vcc 2
Vcc 1
COM
VS
STBY
CONTROL LOGIC
OUTPUT DRIVE BUFFER
OUTPUT DRIVE
U IN
V IN
W IN
CSPL1
CSPL2
I COM
R452-454 DRUM DRIVE CURRENT SENS
SW Q452,453
IC451 (1/2)
DRUM MOTOR DRIVE
1.2Vp-p
CN905
B-MECHA(1/2)
(SEE PAGE 4-40)
COM
M901 DRUM MOTOR
U
V
W
CN906
CAP VS
VTR UNREG
VCC 2
CAP ON
STANDBY
CAP FWD
FRC
IC001 (1/2)
CAPSTAN MOTOR DRIVE
Vcc
VS
H1(+)
H1(-)
H2(+)
H2(-)
H3(+)
H3(-)
U IN 1
U IN 2
V IN 1
V IN 2
W IN 1
W IN 2
120° LOGIC
STBY
POWER OFF
HE POWER
VH+
VH-
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
C HALL GND
C HALL VCC
3Vp-p

3-5. MODE CONTROL BLOCK DIAGRAM


CF-49 BOARD
(SEE PAGE 4-60)
(MANUAL FOCUS MODEL)
MF-8500 BOARD
(SEE PAGE 4-60)
S002 FADER
S001 FOCUS
AUTO
MANUAL
INFINITY
RV001 FOCUS DIAL
CN001
CN002
AUTO
INFINITY
FADER
FOCUS A
FOCUS B
S024 START/STOP MODE
5 SEC
S021 TIME
EXECUTE
S010 MENU
S006 PICTURE EFFECT
S001 DIGITAL EFFECT
(DIGITAL EFFECT MODEL)
S015 CONTROL DIAL
BH001 LITHIUM BATTERY
S017 BACK LIGHT
S012 EXPOSURE
(EXPOSURE MODEL)
S018 TITLE
S008 COUNTER RESET
S003 DATE
S020 AE DIAL
BZ001 BUZZER
LCD903
LCD INDICATOR
BACK LIGHT
CN5801/CN4801
IC001
COM1
COM4
SEG1
SEG16
XCS
C/XD
SO
SCK
VDD
XCS LCD DRIVER
LCD COM/XDATA
OSD SO
XOSD SCK
CHARGE LED ON
BACK LIGHT DRIVE
Q003,005
LCD LED ON
(LCD BACKLIGHT MODEL)
(B/W EVF MODEL)
B/W EVF (VF-99)
XTALLY LED
(SEE PAGE 3-27)
CN008
Q001 LED DRIVE
TALLY LED
(COLOR EVF MODEL)
(B/W EVF MODEL)
VC-195 BOARD
(SEE PAGE 4-47)
CN911
BATT LI 3V
DIAL A
DIAL B
KEY AD2
KEY AD4
KEY AD5
KEY AD3
BEEP SIG
IC604
MODE CONTROL
BACK UP VCC
XRESET
XLI PRE END
BATT IN
ACV SENS
BATT SENS
1.5Vp-p
20 MHz
IC604 ㊶
X601 20MHz
X602 32.768KHz
20MHz OUT
20MHz IN
32kHz IN
32kHz OUT
2.6Vp-p
32 kHz
IC604 ㊷
XCS LCD DRIVER
LCD COM/XDATA
CHARGE LED
LCD LED ON
TALLY LED
FOCUS A AD
FOCUS B AD
ZOOM SW AD
VTR/CAMERA CONTROL
IC602
INITIAL RESET, BACKUP VCC
V OUT
V IN
RESET
VRO
PREEND
CS
V BAT
D602
D601
D610
E 3.15V
LI 3V
CN914
BATT UNREG
VTR UNREG
POWER (DD-105)
XCS VC
SYS V
DEW AD
XCC DOWN
SWP
HI SI
HI SO
XHI SCK
XSYS RST
VTR/CAMERA CONTROL
(SEE PAGE 3-9)
HP ON
SP ON
SP SEL
MELODY ENV
MELODY
EXT MIC DET
XWIND ON
HP SENS
JACK MONO
(STEREO MODEL)
Q619
X JACK MONO
F TALLY LED
IR ON
AUDIO
(SEE PAGE 3-20)
(TIME CODE MODEL)
IC701
VSC
XCLR
RF
SCK
XCS
SI
SO
VDD
D3.1V
REC COMP
REF
OSC
MASK
RAMP
AF
REC
RAMP CONT
Q705 FILTER
Q701-704 FILTER
REC PCM
PB PCM
CL
VIHDO
AF REC
PCM REC
CAMERA/VIDEO
CAMERA REC
3Vp-p
IC701 ⑯
XCS VSC
XSIRCS IN
XVTR MODE SW
XSYS RST
KEY AD0
KEY AD1
XCS OSD
OSD SO
XOSD SCK
V JACK IN
XS JACK IN
CAM DD ON
CAMERA/VIDEO
(SEE PAGE 3-7)
XPHOTO FREEZ
IR LED ON
HOTSHOE ID1
HOTSHOE ID2
IB SI
IB SO
I/F BLOCK
Q607
D609
SW LED VTR
XCAM +STBY SW
XCAM +PHOTO SW
XS/S SW
XEJECT SW
XLANC JACK IN
D608
IC603
LANC I/O
VTR UNREG
UNREG
LANC DC
LANC IN/OUT
DATA
WAKE
POWER
VCC
Q620
E 3.15V
LANC OUT
LANC IN
XLANC PWR ON
XLANC ON
CHARGE INH
INIT CHARGE ON
FAST CHARGE
BATT/XEXT
SHOE ON
XDRY BATT
VTR DD ON
CN909
FP-633(FLEXIBLE)
(SEE PAGE 4-50)
LANC SIG
SHOE ID1
SHOE ID2
(INTELLIGENT ACCESSORY SHOE MODEL)
INTELLIGENT ACCESSORY SHOE
CN912
BATT SIG
SHOE ON
DC PACK SW
POWER (DD-105)
MA-311 BOARD(1/2)
(SEE PAGE 4-54)
REMOTE COMMANDER RECEIVER
IC301
D305
(REMOTE COMMANDER MODEL)
CN303
CN903
XSIRCS SIG
XCAM MODE SW
XVTR MODE SW
S303 CAMERA
POWER
S302 PLAYER
VTR CONTROL SWITCH BLOCK(FK-8500)
(SEE PAGE 4-54)
S010 EDIT SEARCH (-)
S009 EDIT SEARCH (+)
S005,007 REC (●)
(VTR REC MODEL)
S003 FF (▶▶)
S001 STOP (■)
S006 PLAY (▷)
S004 REW (◀◀)
S002 PAUSE (❚❚)
RV001 ZOOM
VTR LED
D001-007
CN935
DD-105 BOARD(1/3)
(SEE PAGE 4-85)
ZOOM VR
Q932 LED DRIVE
Q933,934
MT 4.75V
FK LED ON
D 3.1V
CN934
CN932
(PHOTO MODE MODEL)
CONTROL SWITCH BLOCK(SS-8500)
(SEE PAGE 4-54)
S004 PHOTO FREEZE (1 CLICK)
PHOTO REC (2 CLICK)
S001 STANDBY
PHOTO ← CAMERA ← OFF
S002 START/STOP
S003 EJECT
J001 LANC
(EXCEPT PHOTO MODE MODEL)
CONTROL SWITCH BLOCK (SS-8500)
(SEE PAGE 4-54)
S001 STANDBY
OFF
CAMERA
S002 START/STOP
S003 EJECT
J001 LANC
LANC SIG

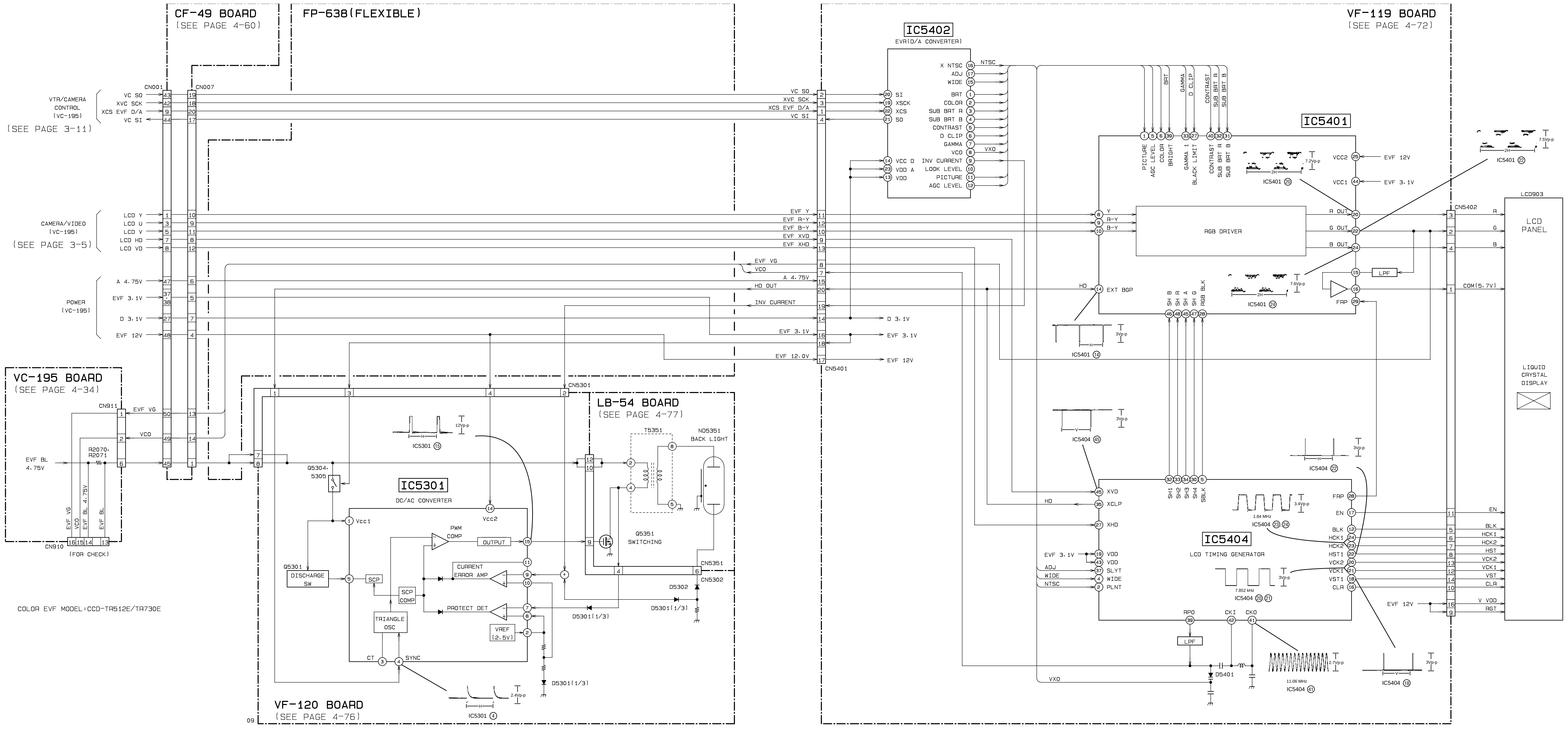
STEREO MODEL:CCD-TR730E/TR840E/TR845E
LCD BACKLIGHT MODEL:CCD-TR840E/TR845E
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR730E/TR840E/TR845E
COLOR EVF MODEL:CCD-TR512E/TR730E
B/W EVF MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR640E/TR840E/TR845E
VTR REC MODEL:CCD-TR840E(Australian model)
MANUAL FOCUS MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
EXPOSURE MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
PHOTO MODE MODEL:CCD-TR730E
DIGITAL EFFECT MODEL:CCD-TR730E
TIME CODE MODEL:CCD-TR845E
REMOTE COMMANDER MODEL:CCD-TR412E/TR511E/TR512E/TR640E/TR730E/TR840E/TR845E

3-6. AUDIO BLOCK DIAGRAM

VC-195 BOARD
(SEE PAGE 4-43)
IC301
AFM PROCESS
BPF
MOD/DEMOD
NR
AGC
MX
MTX
BUS DECODER
ST/MONO DET
CAMERA/VIDEO
(SEE PAGE 3-8)
CAMERA REC
PB
(MONAURAL MODEL)
(STEREO MODEL)
Q305
Q307
Q301
Q302
Q308,309 BUFFER
Q305 ON/OFF MUTE SWITCH
POWER MUTE
AUDIO 4.75V
AU 3.1V
XMIC MONO
CPC (FOR CHECK)
CN910
CN909
CN904
CN902
(INTELLIGENT ACCESSORY SHOE MODEL)
FP-633(FLEXIBLE)
INTELLIGENT ACCESSORY SHOE
SE-65 BOARD(1/2)
(SEE PAGE 4-10)
HEADPHONE
PJ-81 BOARD(1/3)
(SEE PAGE 4-52)
AUDIO L (MONO)
AUDIO R
VTR/CAMERA CONTROL
(SEE PAGE 3-9)
MODE CONTROL
(SEE PAGE 3-17)
(NIGHT SHOT MODEL)
CN903
IC321
MIC AMP
Q321,322 FILTER
(MONAURAL MODEL)
IC322
MIC AMP
5dB AMP
15dB AMP
13dB AMP
HPF
ZOOM-STEREO BALANCE
EQ AMP
INV
BUFFER
MIX
GAIN CONT
INT
EXT
INT/EXT
MIC901 MIC L
MIC902 MIC R
J301 MIC (PLUG IN POWER)
(STEREO MODEL)
IC301
REMOTE COMMANDER RECEIVER
(REMOTE COMMANDER MODEL)
LED DRIVE
D303 (TALLY)
S303 CAMERA
S302 PLAYER
POWER
MA-311 BOARD
(SEE PAGE 4-54)

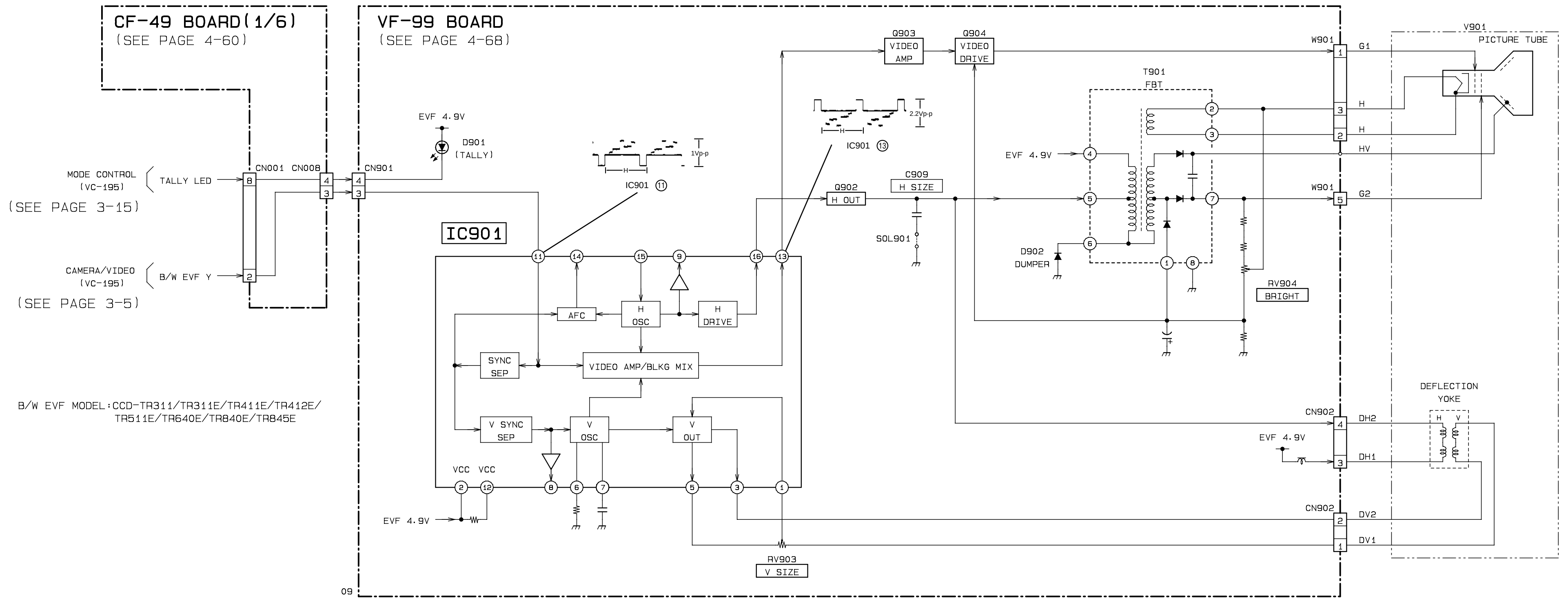
STEREO MODEL:CCD-TR730E/TR840E/TR845E
MONAURAL MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR730E/TR840E/TR845E
NIGHT SHOT MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
REMOTE COMMANDER MODEL:CCD-TR412E/TR511E/TR512E/TR640E/TR730E/TR840E/TR845E

3-7. COLOR EVF BLOCK DIAGRAM

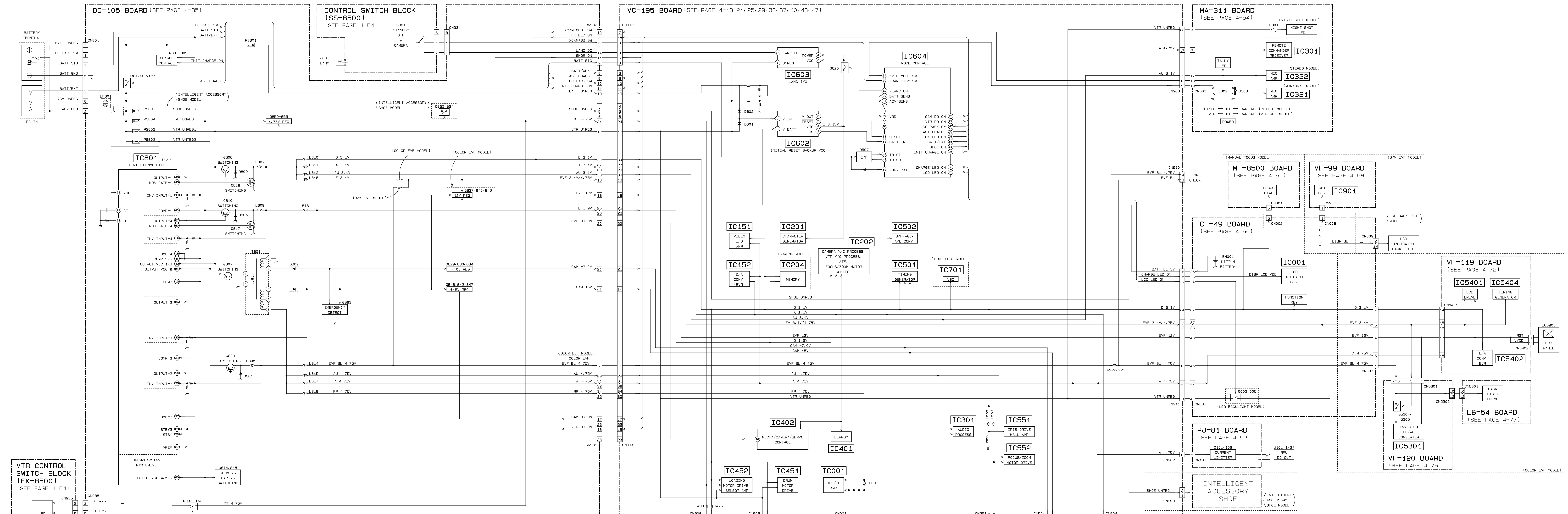

CF-49 BOARD
(SEE PAGE 4-60)
FP-638(FLEXIBLE)
VF-119 BOARD
(SEE PAGE 4-72)
VC-195 BOARD
(SEE PAGE 4-34)
LB-54 BOARD
(SEE PAGE 4-77)
VF-120 BOARD
(SEE PAGE 4-76)
VTR/CAMERA CONTROL (VC-195)
(SEE PAGE 3-11)
CAMERA/VIDEO (VC-195)
(SEE PAGE 3-5)
POWER (VC-195)
CN001
CN007
VC SO
XVC SCK
XCS EVF D/A
VC SI
LCD Y
LCD U
LCD V
LCD HD
LCD VD
A 4.75V
EVF 3.1V
D 3.1V
EVF 12V
EVF Y
EVF R-Y
EVF B-Y
EVF XVD
EVF XHD
EVF VG
VCO
HD OUT
INV CURRENT
EVF 12.0V
CN5401
IC5402
EVR(D/A CONVERTER)
SI
XSCK
XCS
SO
VCC D
VDD A
VDD
X NTSC
ADJ
WIDE
BRT
COLOR
SUB BRT R
SUB BRT B
CONTRAST
D CLIP
GAMMA
VCO
INV CURRENT
LOOK LEVEL
PICTURE
AGC LEVEL
NTSC
VXO
IC5401
PICTURE
AGC LEVEL
COLOR
BRIGHT
GAMMA 1
BLACK LIMIT
CONTRAST
SUB BRT R
SUB BRT B
BRT
GAMMA
D CLIP
VCC2
VCC1
Y
R-Y
B-Y
RGB DRIVER
R OUT
G OUT
B OUT
LPF
FRP
HD
EXT BGP
SH B
SH R
SH A
SH G
RGB BLK
7.2Vp-p
2H
IC5401 ⑳
7.5Vp-p
IC5401 ㉒
7.6Vp-p
IC5401 ㉔
3Vp-p
H
IC5401 ⑭
CN5402
LCD903
LCD PANEL
R
G
B
COM(5.7V)
LIQUID CRYSTAL DISPLAY
IC5404
LCD TIMING GENERATOR
XVD
XCLP
XHD
VDD
SLYT
WIDE
PLNT
SH1
SH2
SH3
SH4
SBLK
FRP
EN
BLK
HCK1
HCK2
HST1
VCK2
VCK1
VST1
CLR
RPO
CKI
CKO
LPF
D5401
HST
VCK2
VCK1
VST
CLR
V VDD
RGT
V
IC5404 ㊺
IC5404 ㉒
3.4Vp-p
1.84 MHz
IC5404 ㉓,㉔
7.852 kHz
IC5404 ⑳,㉑
2.7Vp-p
11.06 MHz
IC5404 ㊶
IC5404 ⑱
CN911
CN910
EVF BL
4.75V
R2070,
R2071
EVF BL 4.75V
EVF BL
(FOR CHECK)
CN5301
Q5304,
5305
IC5301
DC/AC CONVERTER
Vcc1
Vcc2
PWM COMP
OUTPUT
CURRENT ERROR AMP
PROTECT DET
Q5301
DISCHARGE SW
SCP
SCP COMP
TRIANGLE OSC
VREF (2.5V)
CT
SYNC
12Vp-p
IC5301 ⑮
2.4Vp-p
IC5301 ④
T5351
ND5351
BACK LIGHT
Q5351
SWITCHING
CN5351
CN5302
D5302
D5301(1/3)
09

COLOR EVF MODEL:CCD-TR512E/TR730E

3-8. B/W EVF BLOCK DIAGRAM


CF-49 BOARD(1/6)
(SEE PAGE 4-60)
VF-99 BOARD
(SEE PAGE 4-68)
MODE CONTROL
(VC-195)
TALLY LED
(SEE PAGE 3-15)
CAMERA/VIDEO
(VC-195)
B/W EVF Y
(SEE PAGE 3-5)
B/W EVF MODEL:CCD-TR311/TR311E/TR411E/TR412E/
TR511E/TR640E/TR840E/TR845E
CN001
CN008
CN901
EVF 4.9V
D901
(TALLY)
1Vp-p
H
IC901 ⑪
IC901
AFC
H
OSC
H
DRIVE
SYNC
SEP
VIDEO AMP/BLKG MIX
V SYNC
SEP
V
OSC
V
OUT
VCC
VCC
EVF 4.9V
RV903
V SIZE
09
2.2Vp-p
IC901 ⑬
Q903
VIDEO
AMP
Q904
VIDEO
DRIVE
Q902
H OUT
C909
H SIZE
SOL901
T901
FBT
EVF 4.9V
D902
DUMPER
RV904
BRIGHT
W901
G1
H
H
HV
W901
G2
V901
PICTURE TUBE
DEFLECTION
YOKE
H
V
CN902
DH2
EVF 4.9V
DH1
CN902
DV2
DV1

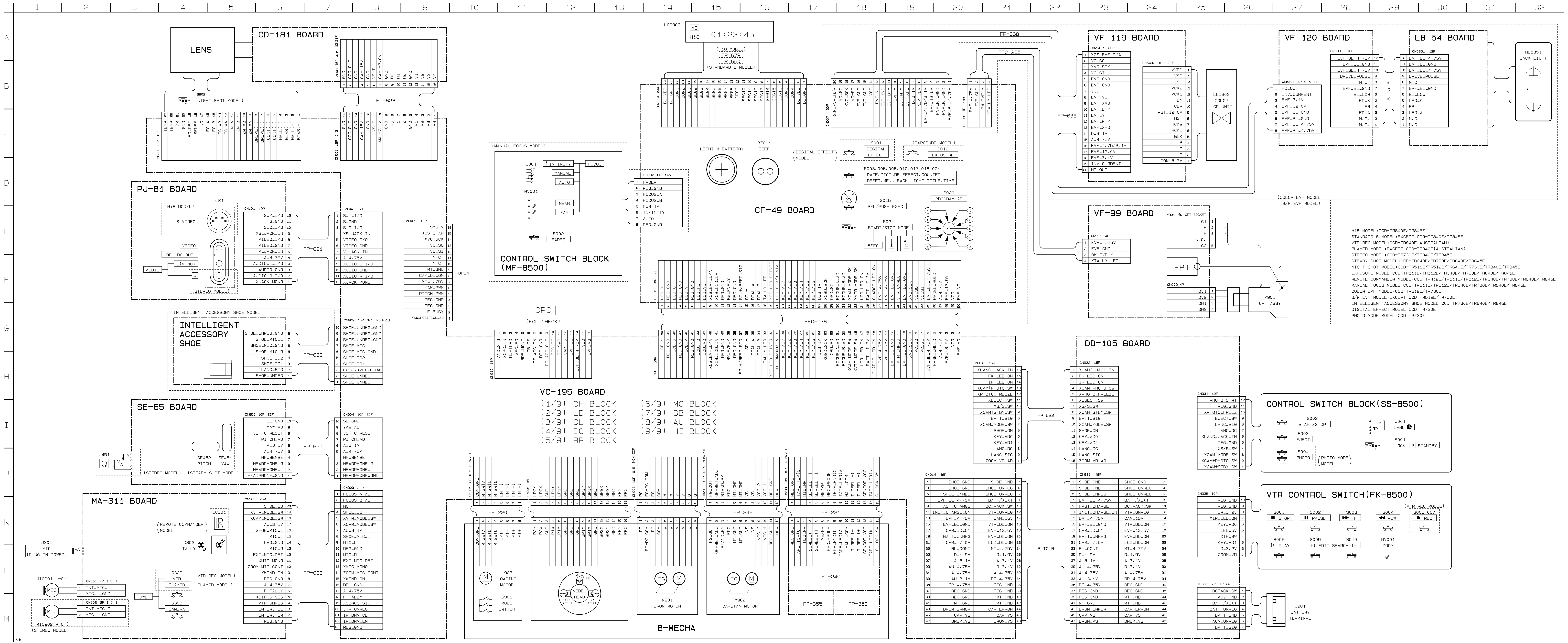
3-9. POWER BLOCK DIAGRAM


DD-105 BOARD (SEE PAGE 4-85)
CONTROL SWITCH BLOCK (SS-8500) (SEE PAGE 4-54)
VC-195 BOARD (SEE PAGE 4-18, 21, 25, 29, 33, 37, 40, 43, 47)
MA-311 BOARD (SEE PAGE 4-54)
BATTERY TERMINAL
DC IN
IC801 (1/2) DC/DC CONVERTER
IC604 MODE CONTROL
IC603 LANC I/O
IC602 INITIAL RESET, BACKUP VCC
IC301
IC322
IC321
MF-8500 BOARD (SEE PAGE 4-60)
VF-99 BOARD (SEE PAGE 4-68)
IC901
CF-49 BOARD (SEE PAGE 4-60)
IC001 LCD INDICATOR DRIVE
VF-119 BOARD (SEE PAGE 4-72)
IC5401
IC5404
IC5402
IC151 VIDEO I/O AMP
IC201 CHARACTER GENERATOR
IC202 CAMERA Y/C PROCESS, VTR Y/C PROCESS, ATF, FOCUS/ZOOM MOTOR CONTROL
IC502 S/H, AGC, A/D CONV.
IC152 D/A CONV. (EVR)
IC204 MEMORY
IC501 TIMING GENERATOR
IC701 VSC
IC402 MECHA/CAMERA/SERVO CONTROL
IC401 EEPROM
IC301 AUDIO PROCESS
IC551 IRIS DRIVE HALL AMP
IC552 FOCUS/ZOOM MOTOR DRIVE
IC452 LOADING MOTOR DRIVE, SENSOR AMP
IC451 DRUM MOTOR DRIVE
IC001 REC/PB AMP
VTR CONTROL SWITCH BLOCK (FK-8500) (SEE PAGE 4-54)
B-MECHA (SEE PAGE 4-40)
CD-181 BOARD (SEE PAGE 4-7)
IC401 CCD IMAGER
SE-65 BOARD (SEE PAGE 4-10)
IC451
PJ-81 BOARD (SEE PAGE 4-52)
INTELLIGENT ACCESSORY SHOE
LB-54 BOARD (SEE PAGE 4-77)
VF-120 BOARD (SEE PAGE 4-76)
IC5301
LCD PANEL
(COLOR EVF MODEL)
(B/W EVF MODEL)
(INTELLIGENT ACCESSORY SHOE MODEL)

INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR730E/TR840E/TR845E
COLOR EVF MODEL:CCD-TR512E/TR730E
B/W EVF MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR640E/TR840E/TR845E
PHOTO MODE MODEL:CCD-TR730E
TIME CODE MODEL:CCD-TR845E
TBC&DNR MODEL:CCD-TR730E/TR840E/TR845E
VTR REC MODEL:CCD-TR840E(Australian model)
PLAYER MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E/TR840E(EXCEPT Australian model)/TR845E
STEREO MODEL:CCD-TR730E/TR840E/TR845E
MONAURAL MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E
LCD BACKLIGHT MODEL:CCD-TR840E/TR845E
STEADY SHOT MODEL:CCD-TR640E/TR730E/TR840E/TR845E
MANUAL FOCUS MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
NIGHT SHOT MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM

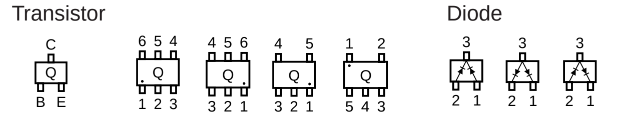

LENS
CD-181 BOARD
FP-623
S902 (NIGHT SHOT MODEL)
PJ-81 BOARD
(Hi8 MODEL)
S VIDEO
VIDEO
RFU DC OUT
AUDIO
(L(MONO))
(R)
(STEREO MODEL)
FP-621
INTELLIGENT ACCESSORY SHOE
(INTELLIGENT ACCESSORY SHOE MODEL)
FP-633
SE-65 BOARD
SE452 PITCH
SE451 YAW
(STEREO MODEL)
(STEADY SHOT MODEL)
FP-620
MA-311 BOARD
(REMOTE COMMANDER MODEL)
IC301
D303 TALLY
J301 MIC (PLUG IN POWER)
MIC901(L-CH)
MIC902(R-CH) (STEREO MODEL)
S302 VTR PLAYER
(VTR REC MODEL)
(PLAYER MODEL)
POWER
S303 CAMERA
FP-629
(MANUAL FOCUS MODEL)
S001
INFINITY
FOCUS
MANUAL
AUTO
RV001
NEAR
FAR
S002 FADER
CONTROL SWITCH BLOCK (MF-8500)
CPC (FOR CHECK)
OPEN
LCD903
01:23:45
Hi8
(Hi8 MODEL) FP-679 FP-680 (STANDARD 8 MODEL)
LITHIUM BATTERY
BZ001 BEEP
(DIGITAL EFFECT MODEL)
S001 DIGITAL EFFECT
(EXPOSURE MODEL)
S012 EXPOSURE
S003-006,008-010,017,018-021
DATE·PICTURE EFFECT·COUNTER RESET·MENU·BACK LIGHT·TITLE·TIME
S015 SEL/PUSH EXEC
S020 PROGRAM AE
S024 START/STOP MODE
CF-49 BOARD
FFC-236
VC-195 BOARD
(1/9) CH BLOCK
(2/9) LD BLOCK
(3/9) CL BLOCK
(4/9) IO BLOCK
(5/9) RR BLOCK
(6/9) MC BLOCK
(7/9) SB BLOCK
(8/9) AU BLOCK
(9/9) HI BLOCK
FP-220
FP-248
FP-221
FP-249
FP-355
FP-356
L903 LOADING MOTOR
S901 MODE SWITCH
VIDEO HEAD
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
B-MECHA
FP-638
FFC-235
VF-119 BOARD
LCD902 COLOR LCD UNIT
VF-120 BOARD
B TO B
LB-54 BOARD
ND5351 BACK LIGHT
(COLOR EVF MODEL)
(B/W EVF MODEL)
VF-99 BOARD
FBT
HV
V901 CRT ASSY
DD-105 BOARD
FP-622
B TO B
CONTROL SWITCH BLOCK(SS-8500)
S002 START/STOP
S003 EJECT
S004 PHOTO
(PHOTO MODE MODEL)
J001 LANC
S001 LOCK STANDBY
VTR CONTROL SWITCH(FK-8500)
S001 STOP
S002 PAUSE
S003 FF
S004 REW
(VTR REC MODEL)
S005,007 REC
S006 PLAY
S009 (+) EDIT SEARCH (-)
S010
RV001 ZOOM
J901 BATTERY TERMINAL

Hi8 MODEL:CCD-TR840E/TR845E
STANDARD 8 MODEL:EXCEPT CCD-TR840E/TR845E
VTR REC MODEL:CCD-TR840E(AUSTRALIAN)
PLAYER MODEL:EXCEPT CCD-TR840E(AUSTRALIAN)
STEREO MODEL:CCD-TR730E/TR840E/TR845E
STEADY SHOT MODEL:CCD-TR640E/TR730E/TR840E/TR845E
NIGHT SHOT MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
EXPOSURE MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
REMOTE COMMANDER MODEL:CCD-TR412E/TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
MANUAL FOCUS MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
COLOR EVF MODEL:CCD-TR512E/TR730E
B/W EVF MODEL:EXCEPT CCD-TR512E/TR730E
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR730E/TR840E/TR845E
DIGITAL EFFECT MODEL:CCD-TR730E
PHOTO MODE MODEL:CCD-TR730E

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- ▨ : Pattern from the side which enable seeing.
  (The other layer's patterns are not indicated.)
- Circled numbers refer to waveforms.
- Through hole is omitted.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.


Transistor
C
Q
B E
6 5 4
1 2 3
4 5 6
3 2 1
4 5
3 2 1
1 2
5 4 3
Diode
3
2 1

- **For schematic diagrams.**
- All capacitors are in µF unless otherwise noted. pF: µµF.
  50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistor are 1/16W unless otherwise noted.
  kΩ : 1000Ω, MΩ : 1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example	C541	L452
	22U	10UH
	TA A	2520
Kinds of capacitor	Temperature chracteristics	External dimensions (mm)

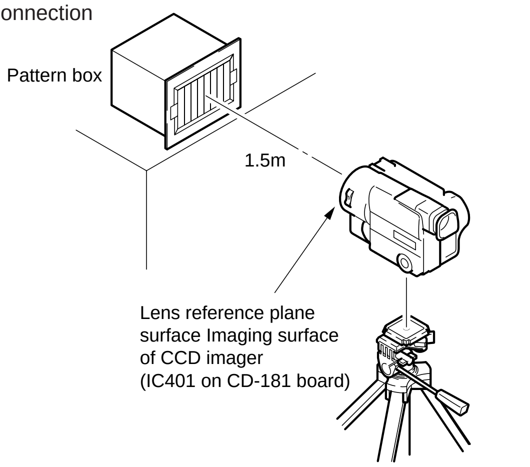
- Constants of resistors, capasitors, ICs and etc with XX indicate tha they are not used. In such cases, the unused circuits may be indicated.
- Parts with ☆ differ according to the model/destination. Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → $\overline{\text{PB/REC}}$
- ─▭─ : non flammable resistor.
- ─▭─ : fusible resistor.
- ▭ : panel designation.
- ━━ : B+ Line
- ╍╍ : B– Line
- ⇨ : IN/OUT direction of (+, –) B LINE.
- ▭ : adjustment for repair.
- Circled numbers refer to waveforms.

The components identified by mark ⚠or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une piéce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform.**
- The object is color bar chart of pattern box.
- Voltages and dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).
- Voltages variations may be noted due to normal production tolerances.

1. Connection


Pattern box
1.5m
Lens reference plane surface Imaging surface of CCD imager (IC401 on CD-181 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

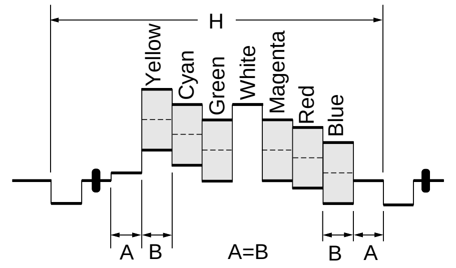

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A B
A=B
B A

Fig. a (Video output terminal output waveform)

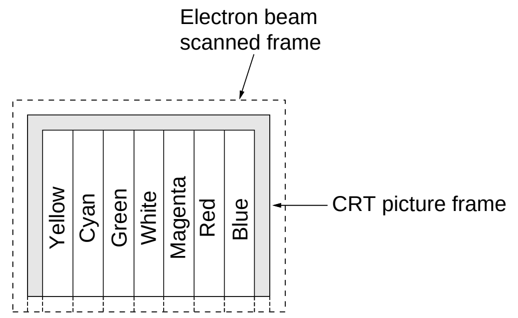
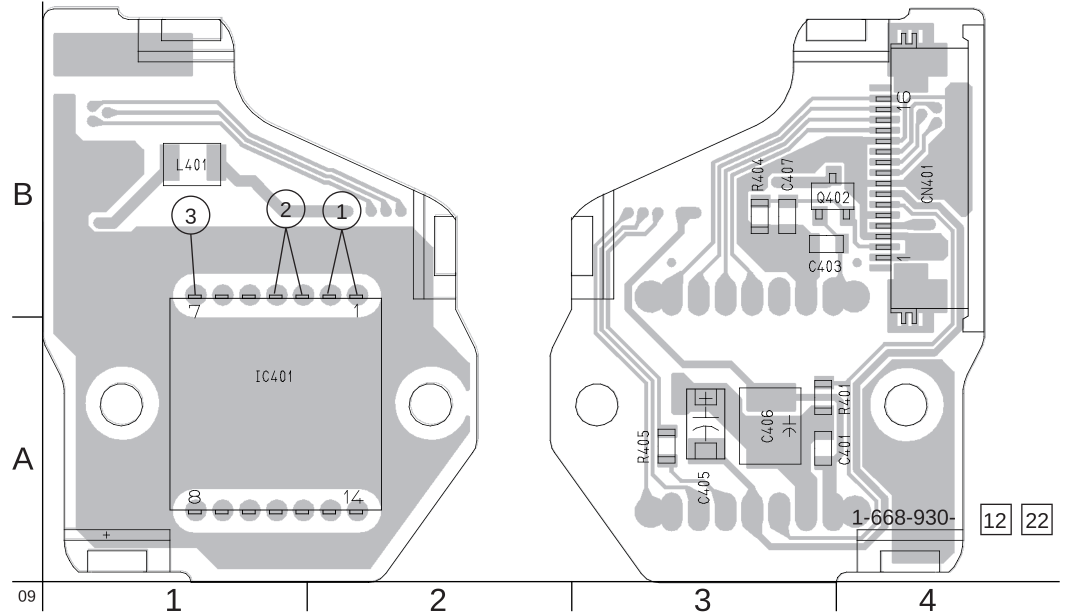

Electron beam scanned frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
CRT picture frame

Fig. b (Picture on monitor TV)

CD-181 (CCD IMAGER) PRINTED WIRING BOARD

– Ref No. CD-181 BOARD: 3,000 series –

CD-181 BOARD (SIDE B)   CD-181 BOARD (SIDE A)


B
A
L401
IC401
1-668-930-
12
22
09
1
2
3
4

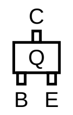
CD-181 BOARD

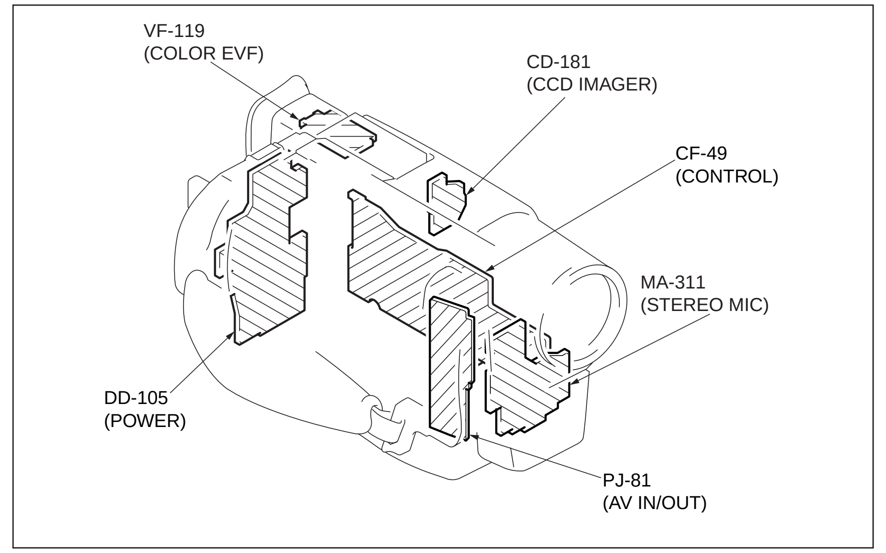
C401	A-3
C403	B-3
C405	A-3
C406	A-3
C407	B-3
CN401	B-4
IC401	A-1
L401	B-1
Q402	B-3
R401	A-3
R404	B-3
R405	A-3

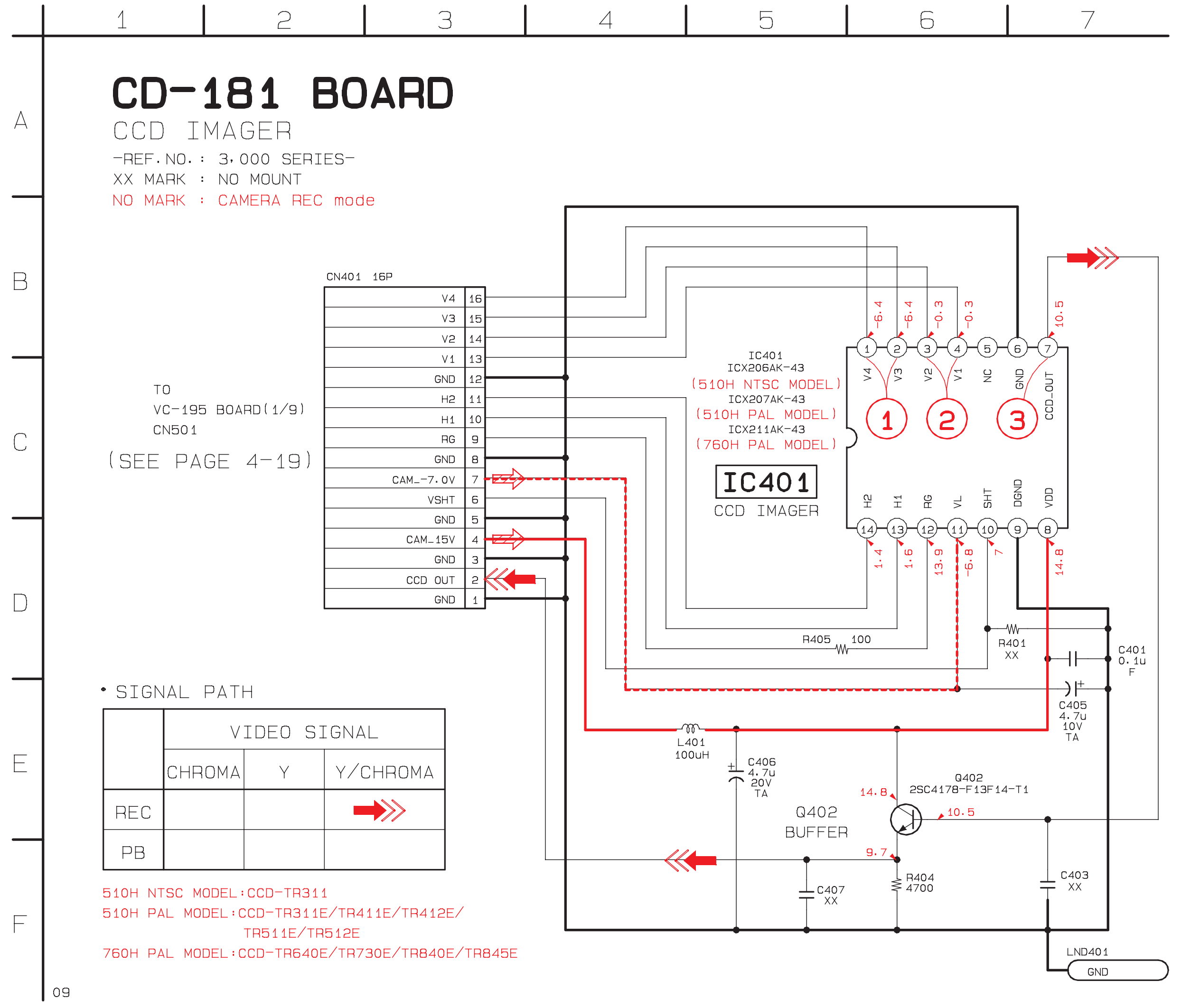
- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

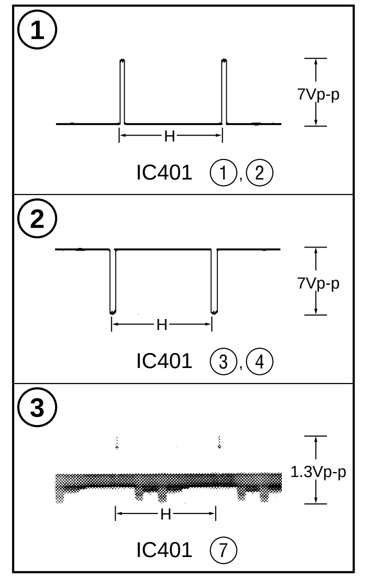
- Chip transistor




VF-119 (COLOR EVF)
CD-181 (CCD IMAGER)
CF-49 (CONTROL)
MA-311 (STEREO MIC)
DD-105 (POWER)
PJ-81 (AV IN/OUT)


CD-181 BOARD
CCD IMAGER
-REF.NO.: 3,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
CN401 16P
TO VC-195 BOARD(1/9) CN501
(SEE PAGE 4-19)
V4 V3 V2 V1 GND H2 H1 RG GND CAM_-7.0V VSHT GND CAM_15V GND CCD OUT GND
IC401 ICX206AK-43 (510H NTSC MODEL) ICX207AK-43 (510H PAL MODEL) ICX211AK-43 (760H PAL MODEL)
IC401 CCD IMAGER
-6.4 -6.4 -0.3 -0.3 10.5
1.4 1.6 13.9 -6.8 7 14.8
R405 100
R401 XX
C401 0.1u F
C405 4.7u 10V TA
L401 100uH
C406 4.7u 20V TA
Q402 2SC4178-F13F14-T1
Q402 BUFFER
14.8 10.5 9.7
R404 4700
C407 XX
C403 XX
LND401 GND
SIGNAL PATH
VIDEO SIGNAL
CHROMA Y Y/CHROMA
REC
PB
510H NTSC MODEL:CCD-TR311
510H PAL MODEL:CCD-TR311E/TR411E/TR412E/TR511E/TR512E
760H PAL MODEL:CCD-TR640E/TR730E/TR840E/TR845E
09

CD-181BOARD
CAMERA REC



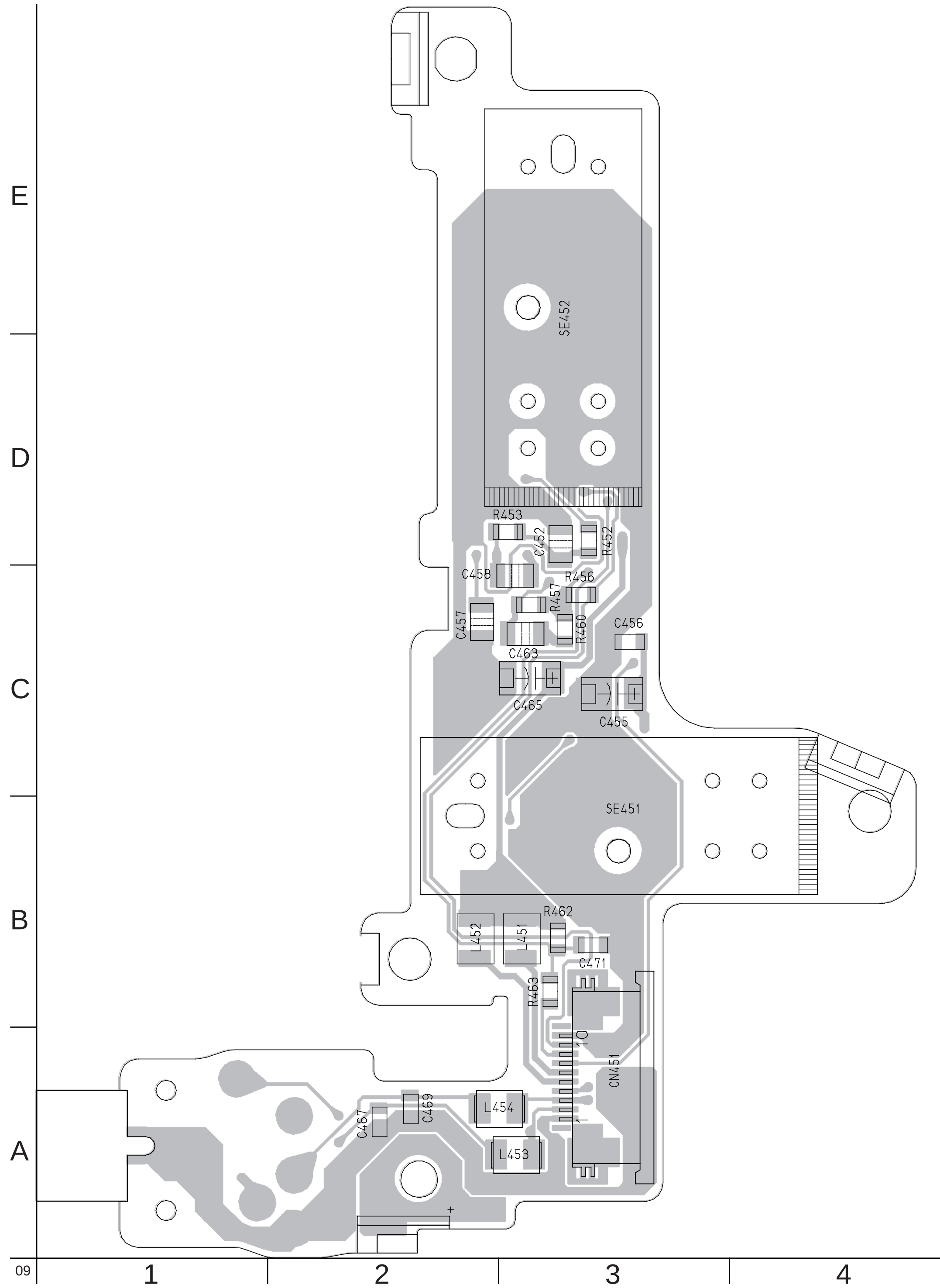
Note on the CCD imager replacement

- The CCD imager is not mounted for the already mounted CD-181 board supplied as the repair parts.
  When replacing the CD-181 board, remove the CCD imager from the old board and install on the new board.
- Perform all adjustments of the camera block when the CCD imager has been replaced.
- Handle the CCD imager with attention such as MOS IC as it may be broken by static electricity in the structure.
  Also, prevent the receiving light section from dust attached and strong light.

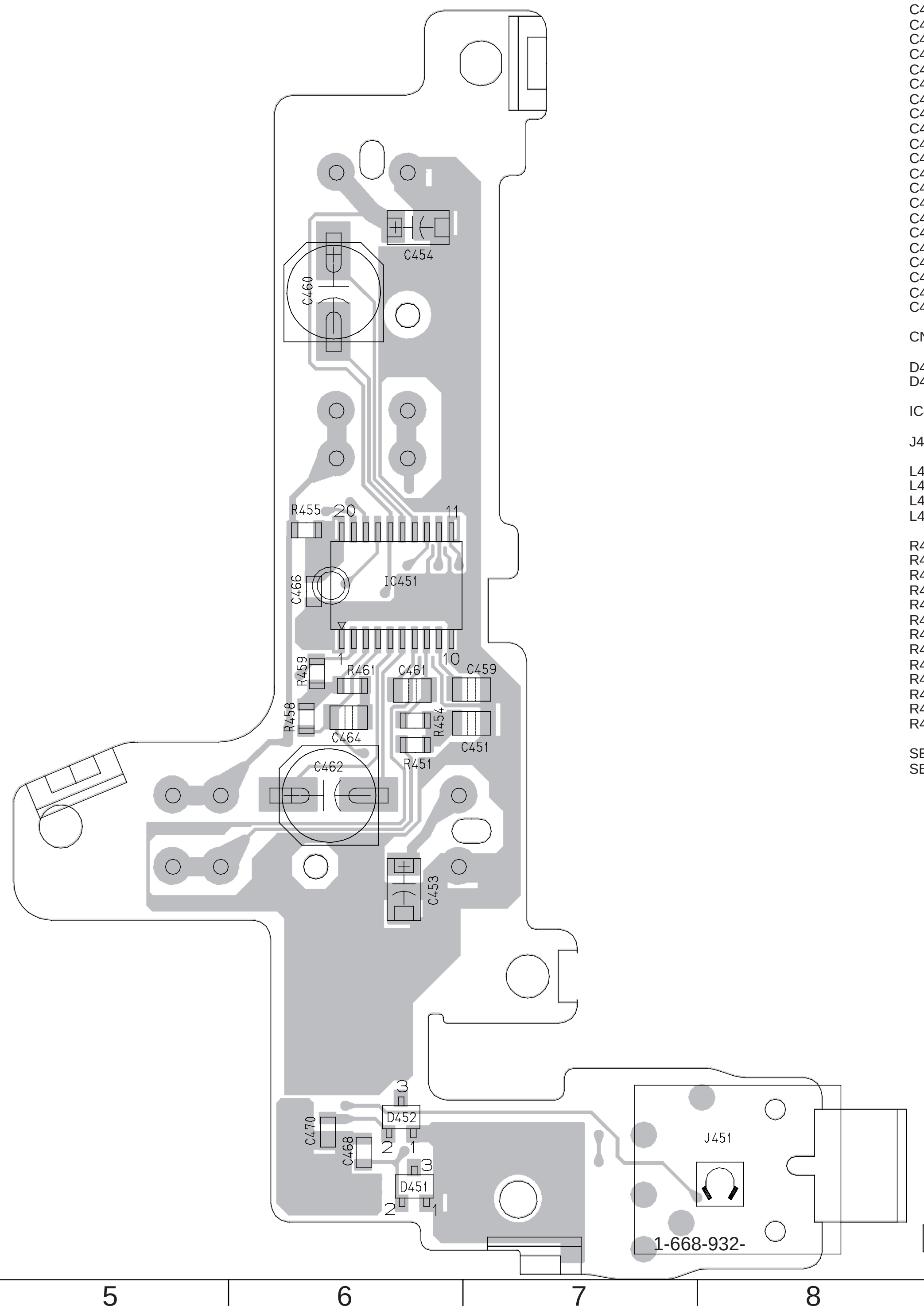
SE-65 (STEADY SHOT) PRINTED WIRING BOARD

– Ref No. SE-65 BOARD: 3,000 series –

SE-65 BOARD (SIDE B)


E
D
C
B
A
SE452
R453
R452
C458
R456
C457
C463
C460
C456
C465
C455
SE451
R462
L452
L451
C471
R463
CN451
C467
C469
L454
L453
09

SE-65 BOARD (SIDE A)


C460
C454
R455
IC451
C466
R459
R458
R461
C461
C459
C464
R454
C451
C462
R451
C453
C470
C468
D452
D451
J451
1-668-932-
12
22

1 2 3 4 5 6 7 8

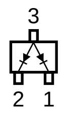
SE-65 BOARD

C451	C-6
C452	D-3
C453	B-6
C454	E-6
C455	C-3
C456	C-3
C457	C-2
C458	C-3
C459	C-6
C460	E-6
C461	C-6
C462	C-6
C463	C-3
C464	C-6
C465	C-3
C466	C-6
C467	A-2
C468	A-6
C469	A-2
C470	A-6
C471	B-3
CN451	A-3
D451	A-6
D452	A-6
IC451	C-6
J451	A-8
L451	B-3
L452	B-2
L453	A-3
L454	A-2
R451	C-6
R452	D-3
R453	D-3
R454	C-6
R455	D-6
R456	C-3
R457	C-3
R458	C-6
R459	C-6
R460	C-3
R461	C-6
R462	B-3
R463	B-3
SE451	B-3
SE452	D-3

- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip diode



SE-65 BOARD (STEADY SHOT MODEL)

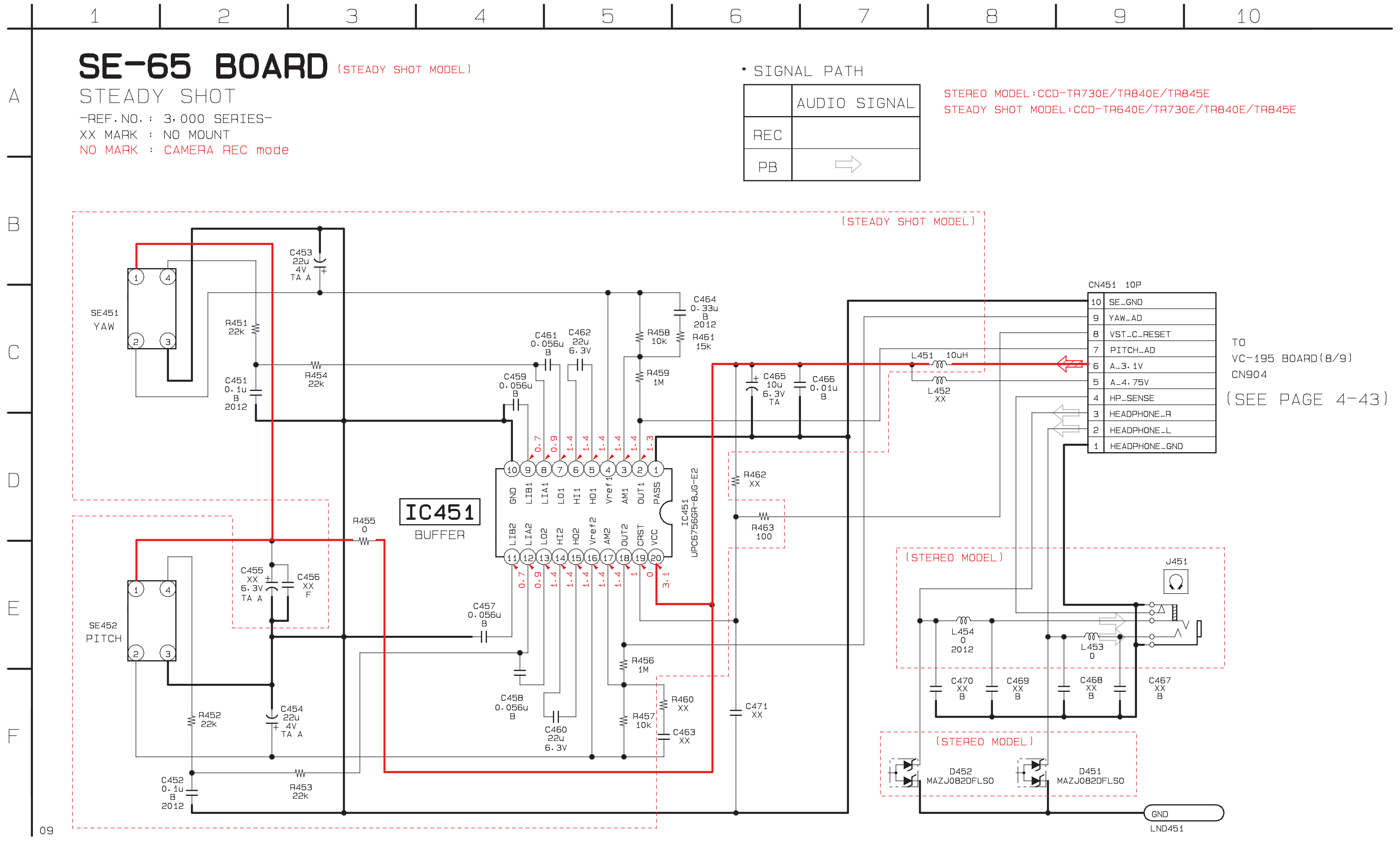
STEADY SHOT

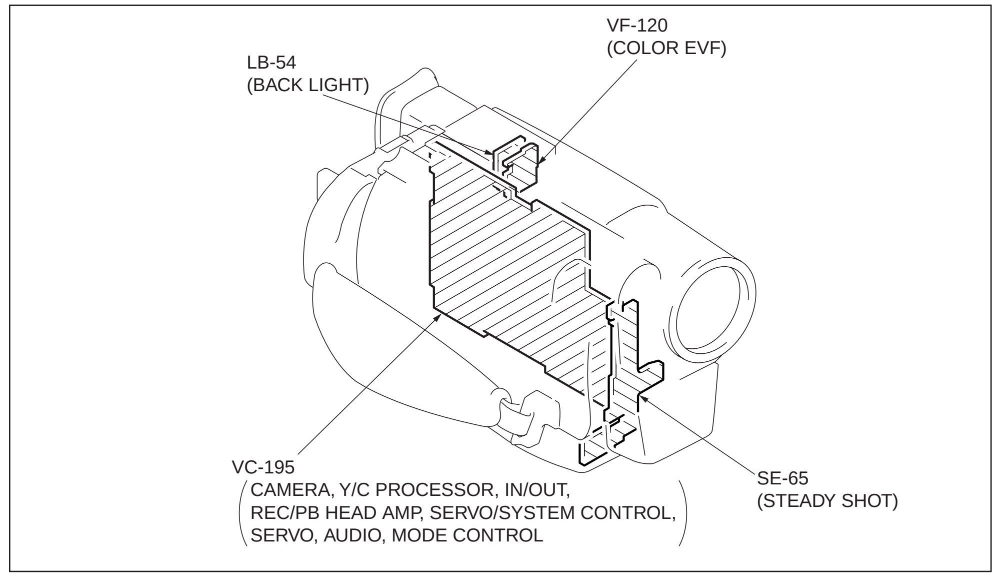
-REF.NO.: 3,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode

• SIGNAL PATH

	AUDIO SIGNAL
REC	
PB	⇨

STEREO MODEL:CCD-TR730E/TR840E/TR845E
STEADY SHOT MODEL:CCD-TR640E/TR730E/TR840E/TR845E


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
(STEADY SHOT MODEL)
SE451
YAW
SE452
PITCH
C453 22u 4V TA A
R451 22k
C451 0.1u B 2012
R454 22k
C455 XX 6.3V TA A
C456 XX F
R455 0
IC451
BUFFER
IC451 UPC6756GR-8JG-E2
C457 0.056u B
C458 0.056u B
C459 0.056u B
C461 0.056u B
C462 22u 6.3V
C460 22u 6.3V
C464 0.33u B 2012
R458 10k
R461 15k
R459 1M
R456 1M
R457 10k
R460 XX
C463 XX
C465 10u 6.3V TA
C466 0.01u B
R462 XX
R463 100
C471 XX
C454 22u 4V TA A
R452 22k
C452 0.1u B 2012
R453 22k
L451 10uH
L452 XX
CN451 10P
10 SE_GND
9 YAW_AD
8 VST_C_RESET
7 PITCH_AD
6 A_3.1V
5 A_4.75V
4 HP_SENSE
3 HEADPHONE_R
2 HEADPHONE_L
1 HEADPHONE_GND
TO
VC-195 BOARD(8/9)
CN904
(SEE PAGE 4-43)
(STEREO MODEL)
J451
L454 0 2012
L453 0
C470 XX B
C469 XX B
C468 XX B
C467 XX B
D452 MAZJ082DFLS0
D451 MAZJ082DFLS0
GND
LND451
09


VF-120
(COLOR EVF)
LB-54
(BACK LIGHT)
VC-195
CAMERA, Y/C PROCESSOR, IN/OUT,
REC/PB HEAD AMP, SERVO/SYSTEM CONTROL,
SERVO, AUDIO, MODE CONTROL
SE-65
(STEADY SHOT)

VC-195 BOARD
(SIDE B)

C002	A-5
C003	A-5
C008	A-4
C009	B-5
C011	B-5
C012	B-5
C013	B-6
C014	B-6
C015	B-5
C016	B-5
C017	B-5
C019	B-5
C020	B-6
C022	B-5
C025	B-6
C038	B-6
C040	B-6
C042	B-5
C043	B-5
C048	B-6
C050	C-6
C051	B-5
C054	B-5
C056	B-5
C058	B-6
C060	C-5
C066	B-6
C067	C-6
C068	C-6
C069	C-5
C070	C-6
C072	C-6
C074	C-6
C076	C-5
C077	C-5
C080	C-5
C083	C-5
C086	C-4
C087	C-4
C090	C-6
C152	D-8
C157	E-8
C158	D-8
C159	C-8
C174	D-8
C175	D-8
C176	D-8
C182	D-8
C183	D-8
C190	D-8
C191	C-7
C192	C-7
C202	D-3
C203	D-3
C204	D-4
C205	E-4
C206	D-4
C207	D-3
C208	D-3
C209	D-6
C210	D-6
C211	D-3
C212	D-3
C213	D-5
C217	D-4
C218	D-4
C227	D-5
C229	E-5
C232	D-3
C233	D-5
C234	D-5
C235	D-3
C236	D-3
C239	E-4
C241	E-3
C243	F-3
C244	F-3
C245	D-4
C246	D-4
C247	D-4
C249	E-4
C252	F-3
C301	B-9
C312	C-9
C371	E-8
C372	E-8
C378	F-7
C380	E-7
C381	E-7
C382	F-8
C383	E-8
C384	E-8
C385	E-8
C387	F-8
C388	E-8
C402	C-1
C413	B-2
C451	A-3
C452	A-3
C453	A-3
C454	A-3
C455	A-3
C456	A-4
C457	A-3
C458	A-4
C459	A-4
C460	A-4
C461	A-3
C462	A-4
C463	A-3
C464	B-3
C465	B-4
C466	B-3
C467	B-3
C468	B-3
C469	B-4
C470	B-4
C471	B-4
C473	A-1
C474	A-2
C475	A-2
C476	A-2
C477	A-2
C478	A-2
C479	A-2
C480	A-2
C481	A-1
C482	A-2
C483	A-2
C484	A-2
C485	A-1
C504	E-6
C505	E-6
C506	E-7
C507	E-6
C508	E-6
C509	E-7
C510	E-6
C514	E-5
C515	E-5
C518	F-5
C553	G-6
C554	G-7
C556	G-7
C557	G-5
C558	G-5
C559	F-7
C563	F-6
C564	F-7
C566	G-7
C569	G-6
C572	F-6
C603	F-1
C607	E-2
C610	F-2
C611	F-2
C613	E-1
C625	E-2
C626	E-2
C627	F-2
C630	F-3
C634	F-3
C636	F-2
C704	F-7
C714	F-8
C715	F-8
C751	B-6
C752	A-7
C753	A-7
C754	A-7
C755	A-7
C756	A-7
C757	A-7
C758	A-8
C759	B-6
C760	B-6
C761	B-8
C762	B-8
C763	B-8
C764	B-8
C765	A-8
C766	A-8
C767	B-8
C768	B-8
C769	A-8
C770	A-8
C771	B-8
C772	A-8
C773	B-8
C774	A-8
C775	A-8
C776	B-8
C777	A-8
C778	B-9
C781	B-8
CN904	A-9
CN907	D-9
CN910	D-1
D001	C-4
D201	D-3
D202	D-3
D371	E-8
D502	F-5
D601	E-2
D602	E-2
D604	F-2
D608	F-1
D609	F-2
D611	E-2
D910	G-1
FB202	E-4
FB203	E-4
FB204	F-3
FB205	F-3
FB206	D-4
FB501	E-5
FB502	E-6
FB503	E-5
FB504	E-5
FB505	E-5
FB506	E-5
IC152	C-8
IC201	E-5
IC204	F-4
IC371	E-7
IC401	C-2
IC403	B-2
IC404	B-2
IC451	A-4
IC452	A-2
IC501	E-6
IC552	G-6
IC602	E-2
IC751	A-8
L002	B-4
L003	B-4
L007	C-6
L008	C-6
L010	C-6
L011	C-6
L014	C-5
L015	C-5
L017	C-5
L019	B-6
L152	D-8
L153	D-7
L154	D-7
L156	C-7
L201	D-3
L202	D-4
L203	D-6
L204	D-4
L205	D-6
L206	D-3
L207	E-4
L209	E-4
L402	C-2
L501	E-6
L552	F-7
L553	G-7
L602	E-3
L701	F-7
L702	F-7
L704	F-8
L751	B-8
L752	B-8
L753	B-8
Q003	A-5
Q004	A-6
Q005	A-5
Q006	A-5
Q007	A-6
Q008	B-6
Q009	B-6
Q010	B-5
Q011	B-5
Q012	B-5
Q016	B-5
Q017	B-6
Q018	C-5
Q019	C-6
Q021	B-6
Q023	C-6
Q025	C-6
Q026	C-6
Q030	C-5
Q031	C-5
Q032	C-7
Q035	C-4
Q037	C-4
Q038	C-5
Q039	C-5
Q041	B-5
Q042	C-4
Q151	D-8
Q202	D-3
Q203	D-3
Q204	D-5
Q205	E-5
Q208	D-6
Q217	D-4
Q218	D-4
Q306	B-9
Q307	C-9
Q311	A-6
Q312	A-7
Q451	B-3
Q452	B-4
Q453	B-4
Q454	A-1
Q455	A-1
Q551	G-7
Q607	F-2
Q619	E-3
Q620	F-2
Q705	F-7
R001	A-6
R002	A-6
R008	A-4
R009	A-5
R010	B-6
R011	B-5
R012	B-5
R013	B-6
R014	B-4
R015	B-5
R016	B-6
R017	B-6
R018	B-5
R019	B-5
R020	B-4
R021	B-5
R023	B-6
R025	B-6
R029	B-5
R031	B-5
R040	B-5
R041	B-5
R042	B-5
R047	B-5
R048	B-5
R049	B-6
R050	B-6
R051	B-6
R056	B-6
R058	B-6
R066	B-6
R067	C-6
R068	C-7
R069	C-5
R069	C-6
R070	C-6
R076	C-6
R077	C-6
R078	C-6
R079	C-6
R080	C-6
R083	C-5
R084	C-5
R087	C-5
R088	C-5
R090	C-5
R094	C-5
R095	C-7
R097	C-5
R100	C-5
R104	C-5
R105	C-6
R106	C-6
R109	B-4
R110	B-5
R112	C-7
R152	D-8
R154	D-8
R157	D-8
R179	D-8
R180	D-8
R183	E-8
R184	E-8
R202	D-3
R203	D-4
R204	D-3
R205	D-3
R206	D-4
R208	D-3
R210	D-3
R211	D-3
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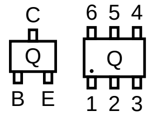
R214	D-5
R215	D-5
R216	D-5
R217	E-4
R223	D-3
R224	D-3
R226	D-4
R240	D-4
R244	D-3
R246	D-3
R247	D-3
R248	E-3
R249	E-3
R250	F-3
R254	D-1
R255	E-5
R257	D-4
R304	B-9
R305	C-9
R329	A-6
R330	A-7
R371	D-8
R372	D-8
R373	D-9
R374	D-8
R375	D-8
R376	D-8
R377	E-8
R378	E-8
R379	E-7
R382	E-8
R383	E-8
R384	E-7
R385	F-8
R386	F-8
R386	F-8
R388	E-8
R389	E-8
R403	C-2
R404	C-3
R415	B-2
R416	B-2
R417	B-2
R418	B-2
R426	C-2
R427	B-2
R428	B-2
R429	B-1
R430	B-1
R432	C-2
R433	C-2
R434	C-2
R452	A-3
R453	A-3
R454	A-3
R455	A-3
R456	A-3
R457	A-3
R459	A-3
R460	A-3
R461	A-3
R462	A-3
R463	A-3
R467	A-2
R468	A-2
R469	A-2
R470	A-2
R471	A-2
R472	A-3
R473	A-1
R475	A-1
R477	A-2
R479	A-2
R480	A-2
R481	A-2
R482	A-2
R483	A-1
R484	A-1
R485	A-1
R486	B-1
R487	A-1
R504	E-6
R505	E-6
R508	E-5
R510	E-5
R511	E-5
R512	F-5
R527	E-5
R552	G-6
R555	G-7
R563	G-5
R564	G-6
R566	G-5
R567	G-6
R570	F-5
R579	G-6
R582	G-6
R603	F-2
R604	F-2
R608	F-2
R612	E-1
R618	F-1
R619	F-1
R620	F-1
R621	F-1
R622	F-2
R624	F-1
R625	F-2
R627	E-2
R628	E-2
R629	F-1
R630	F-2
R631	G-2
R632	G-1
R633	E-2
R634	E-2
R635	E-2
R636	E-2
R637	G-2
R638	G-2
R639	G-2
R640	F-2
R641	F-3
R642	F-2
R643	F-2
R644	F-2
R645	E-2
R646	F-2
R647	F-2
R648	F-2
R649	F-2
R651	F-2
R652	F-3
R653	F-3
R654	F-3
R655	F-2
R662	E-3
R663	F-3
R665	F-3
R678	F-3
R686	E-2
R687	E-2
R689	F-3
R690	F-2
R691	E-2
R692	F-1
R704	G-8
R705	G-7
R716	G-8
R717	F-8
R718	F-7
R719	F-8
R723	F-7
R752	A-7
R753	A-7
R754	B-6
R755	B-6
R757	A-7
R758	A-7
R759	A-7
R760	B-8
R761	A-8
R762	A-8
R763	A-8
R764	B-8
R765	B-8
R766	A-8
R767	B-8
R768	A-8
R770	A-8
R771	A-8
R772	A-8
R773	B-8
R774	B-9
R775	A-8
R921	B-1
R922	D-1
R923	D-1
R924	D-1
R925	D-1
R926	G-7
R927	G-7
RB12	C-8
RB151	D-8
TH401	B-4
X151	D-7
X401	B-3
X501	F-5

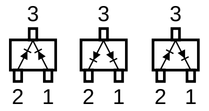
- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

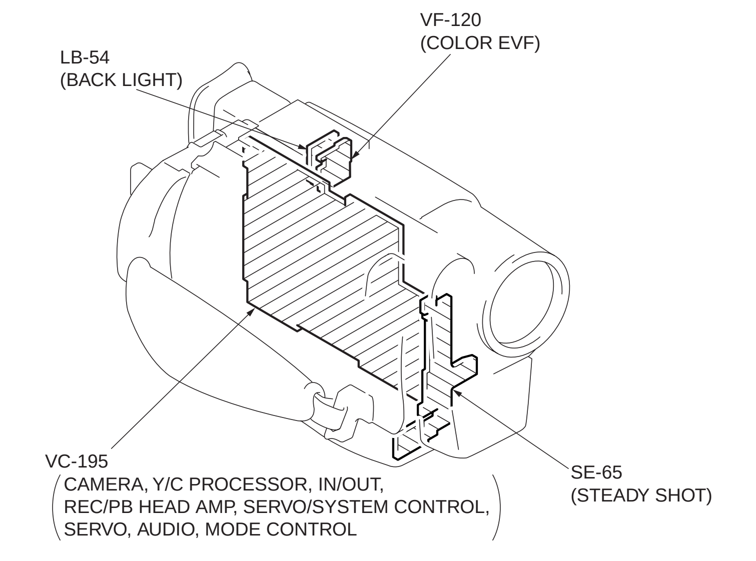
There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



- Chip diode

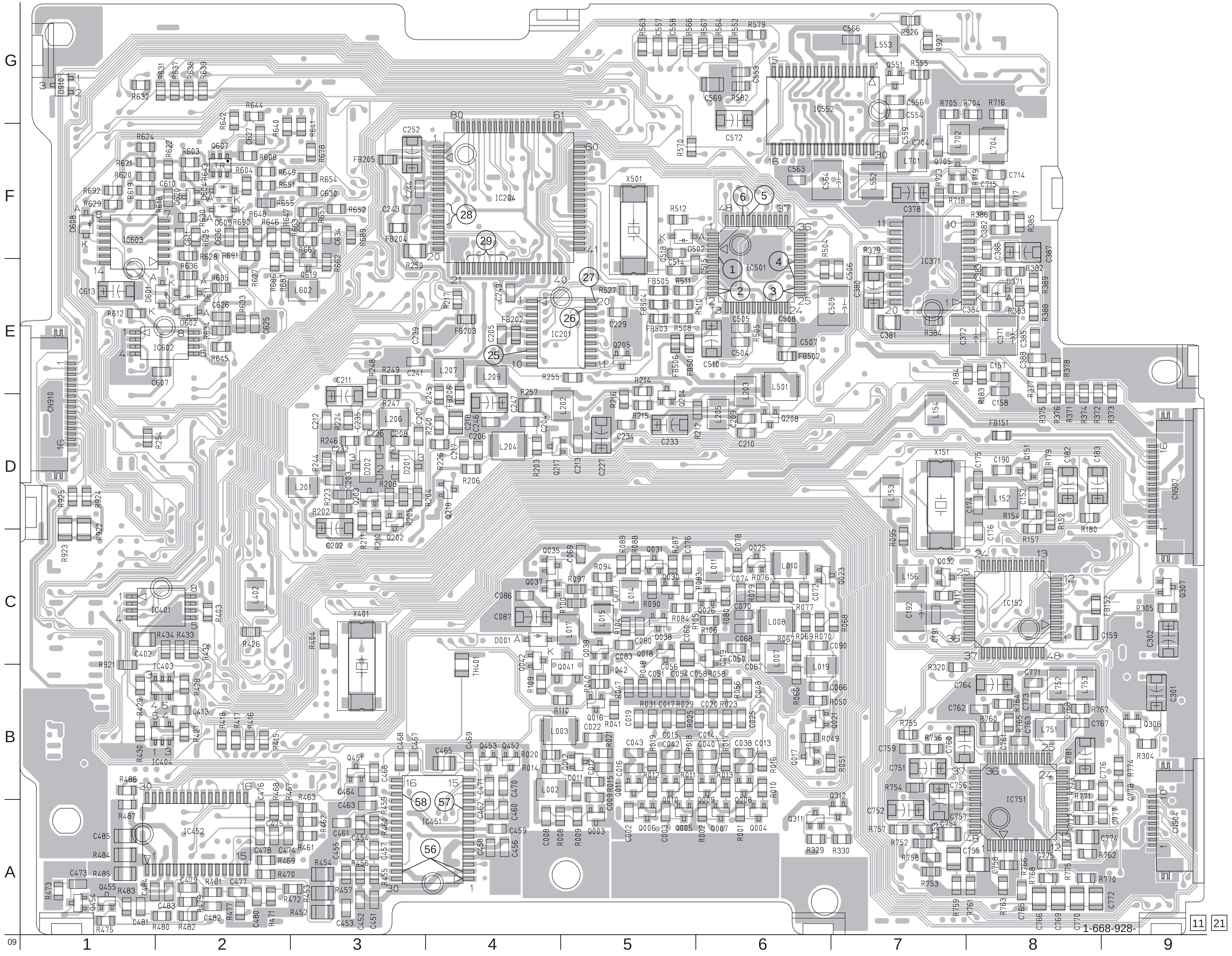



VF-120
(COLOR EVF)
LB-54
(BACK LIGHT)
VC-195
CAMERA, Y/C PROCESSOR, IN/OUT,
REC/PB HEAD AMP, SERVO/SYSTEM CONTROL,
SERVO, AUDIO, MODE CONTROL
SE-65
(STEADY SHOT)

VC-195 (CAMERA, Y/C PROCESSOR, IN/OUT, REC/PB HEAD AMP, SERVO/SYSTEM CONTROL, SERVO, AUDIO, MODE CONTROL) PRINTED WIRING BOARD

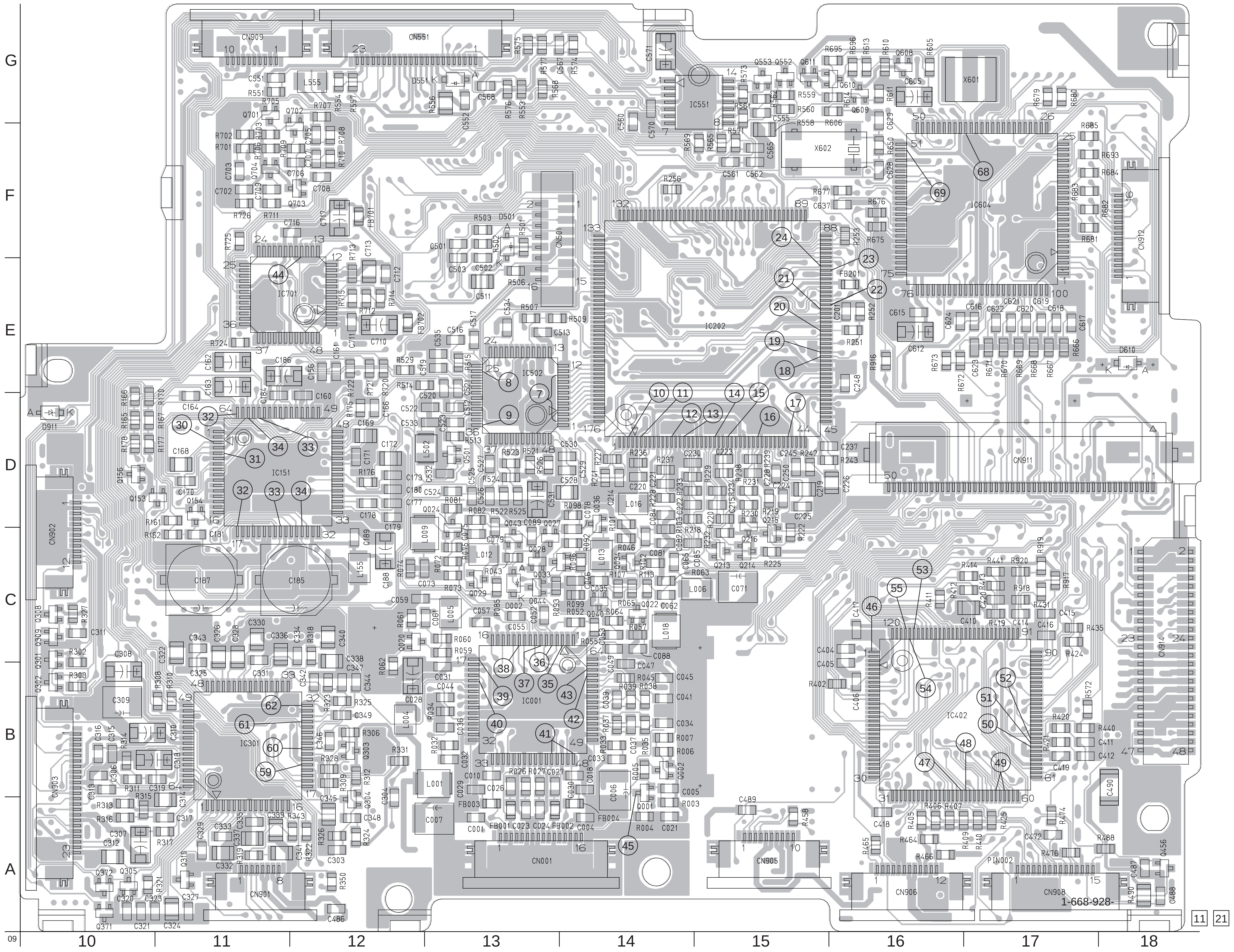
– Ref No. VC-195 BOARD: 1,000 series –

VC-195 BOARD (SIDE B)



CAMERA, Y/C PROCESSOR, IN/OUT, REC/PB HEAD AMP, SERVO/SYSTEM CONTROL, SERVO, AUDIO, MODE CONTROL
VC-195 (SIDE B)

VC-195 BOARD (SIDE A)



VC-195 BOARD
(SIDE A)

C001	A-13
C004	A-14
C004	B-13
C005	B-14
C006	B-14
C007	A-13
C010	B-13
C018	B-14
C021	A-14
C023	A-13
C024	A-13
C026	B-13
C027	B-13
C028	B-12
C029	B-13
C030	B-14
C031	B-13
C032	B-13
C033	B-14
C034	B-14
C035	C-14
C036	B-13
C037	B-14
C039	B-14
C041	B-14
C045	B-14
C046	C-14
C047	B-14
C049	C-14
C052	C-13
C053	C-14
C055	C-13
C057	C-13
C059	C-12
C061	C-13
C062	C-14
C065	C-14
C071	C-15
C073	C-13
C075	C-13
C078	C-14
C079	C-13
C081	C-14
C082	C-14
C084	D-14
C085	C-14
C088	C-14
C089	C-13
C156	E-12
C160	D-12
C161	E-12
C162	E-11
C163	E-11
C164	D-11
C166	D-12
C168	D-11
C169	D-12
C170	D-11
C171	D-12
C172	D-12
C173	D-12
C177	D-12
C178	D-12
C179	D-12
C180	D-12
C181	C-11
C184	D-11
C185	C-12
C186	E-11
C187	C-11
C188	C-12
C189	C-12
C201	E-16
C214	D-14
C215	D-15
C219	D-15
C220	D-14
C221	D-14
C222	D-14
C223	D-15
C224	D-15
C225	D-15
C226	D-16
C228	D-15
C230	D-14
C237	D-16
C245	D-15
C248	E-16
C250	D-15
C303	A-12
C304	A-12
C306	B-10
C307	A10
C308	B-10
C309	B-10
C310	B-10
C311	C-10
C312	A10
C313	B-10
C314	A-11
C315	B-10
C316	B-10
C317	A-11
C318	B-10
C319	B-11
C320	A10
C321	A10
C322	C-11
C323	A-11
C324	A-11
C324	A-12
C325	C-11
C326	C-11
C327	A-11
C328	C-11
C330	C-11
C331	C-11
C332	A-11
C333	A-11
C334	C-12
C335	A-11
C336	C-11
C337	A-11
C338	B-12
C339	A-11
C340	C-12
C341	A-11
C342	B-12
C343	C-11
C344	B-12
C345	A-12
C346	B-12
C347	B-12
C348	A-12
C349	B-12
C404	C-16
C405	B-16
C406	B-16
C410	C-17
C411	B-17
C412	B-17
C414	C-17
C415	C-17
C416	C-17
C417	C-16
C418	A-16
C419	B-17
C420	C-17
C472	A-17
C486	A-12
C487	A-18
C488	A-18
C489	A-15
C490	B-18
C501	F-13
C502	E-13
C503	E-13
C511	E-13
C512	D-13
C513	E-13
C516	E-13
C517	E-13
C519	E-13
C520	E-13
C521	E-13
C522	D-13
C523	D-13
C524	D-13
C525	D-13
C526	D-13
C527	D-13
C528	D-14
C529	D-14
C530	D-14
C531	D-13
C532	D-13
C533	D-13
C534	E-13
C535	E-13
C551	G-11
C552	G-13
C555	G-15
C560	F-14
C561	F-15
C562	F-15
C565	F-15
C567	G-14
C568	G-13
C570	G-14
C571	G-14
C604	F-17
C605	G-16
C612	E-16
C615	E-16
C616	E-17
C617	E-17
C618	E-17
C619	E-17
C620	E-17
C621	E-17
C622	E-17
C623	E-17
C624	E-16
C628	F-16
C629	F-16
C637	F-16
C702	F-11
C703	F-11
C705	F-12
C706	F-12
C707	F-12
C708	F-12
C709	F-11
C710	E-12
C711	E-12
C712	E-12
C713	E-12
C716	F-12
C717	F-12
CN001	A-13
CN501	F-14
CN551	G-12
CN901	A-11
CN902	C-10
CN903	B-10
CN905	A-15
CN906	A-16
CN908	A-17
CN909	G-11
CN911	D-17
CN912	F-18
CN914	B-18
D002	C-13
D501	F-13
D551	G-13
D610	E-18
D911	D-10
FB001	A-13
FB002	A-13
FB003	A-13
FB004	A-14
FB201	E-16
FB701	F-12
FB702	E-12
IC001	B-13
IC151	D-11
IC202	E-15
IC301	B-11
IC402	B-16
IC502	D-13
IC551	G-15
IC701	E-11
L001	B-13
L004	B-12
L005	C-13
L006	C-15
L009	C-13
L012	C-13
L013	C-14
L016	D-14
L018	C-14
L155	C-12
L502	D-13
L555	G-12
Q001	B-14
Q002	B-14
Q020	C-12
Q022	C-14
Q024	C-13
Q027	C-13
Q028	C-13
Q029	C-13
Q033	C-14
Q034	C-14
Q036	D-14
Q040	C-14
Q043	C-13
Q044	C-13
Q153	D-11
Q154	D-11
Q156	D-10
Q213	C-15
Q214	C-15
Q215	C-15
Q216	C-15
Q301	C-10
Q302	B-10
Q303	B-12
Q304	A-12
Q305	A10
Q308	C-10
Q309	C-10
Q310	A-11
Q329	A-11
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Q372	A10
Q456	A-18
Q501	D-13
Q553	G-15
Q608	G-16
Q609	G-16
Q610	G-16
Q611	G-15
Q701	G-11
Q702	F-12
Q703	F-12
Q704	F-11
R003	A-14
R004	A-14
R005	B-14
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R007	B-14
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R035	B-14
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R038	B-14
R039	B-14
R043	C-13
R045	B-14
R046	C-14
R052	C-14
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R057	C-14
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R082	D-13
R085	C-13
R092	C-14
R093	C-13
R096	C-14
R098	D-14
R099	C-14
R101	D-14
R102	C-14
R103	C-14
R107	C-14
R113	C-14
R161	D-11
R162	C-11
R165	D-10
R166	D-10
R167	D-10
R170	D-10
R175	D-12
R176	D-12
R177	D-10
R178	D-10
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R219	D-15
R220	D-15
R222	C-15
R225	C-15
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R228	D-14
R229	D-14
R230	D-15
R231	D-15
R232	C-15
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R234	D-15
R236	D-14
R237	D-14
R238	D-15
R239	D-15
R241	D-14
R242	D-15
R243	D-16
R251	E-16
R252	E-16
R253	F-16
R256	F-14
R302	C-10
R303	B-10
R306	B-12
R308	B-11
R309	B-12
R310	B-11
R311	B-10
R312	B-12
R313	A10
R314	B-10
R315	A10
R316	A10
R317	A-11
R318	C-12
R319	A-11
R321	A10
R322	A-12
R323	B-12
R325	B-12
R326	A-12
R327	C-1
R328	B-12
R331	B-12
R343	A-12
R350	A-12
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R405	A-16
R406	A-16
R407	A-16
R409	A-16
R410	A-17
R411	C-16
R412	C-17
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R419	C-17
R420	B-17
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R425	A-17
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R435	C-17
R440	B-17
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R464	A-16
R465	A-16
R466	A-16
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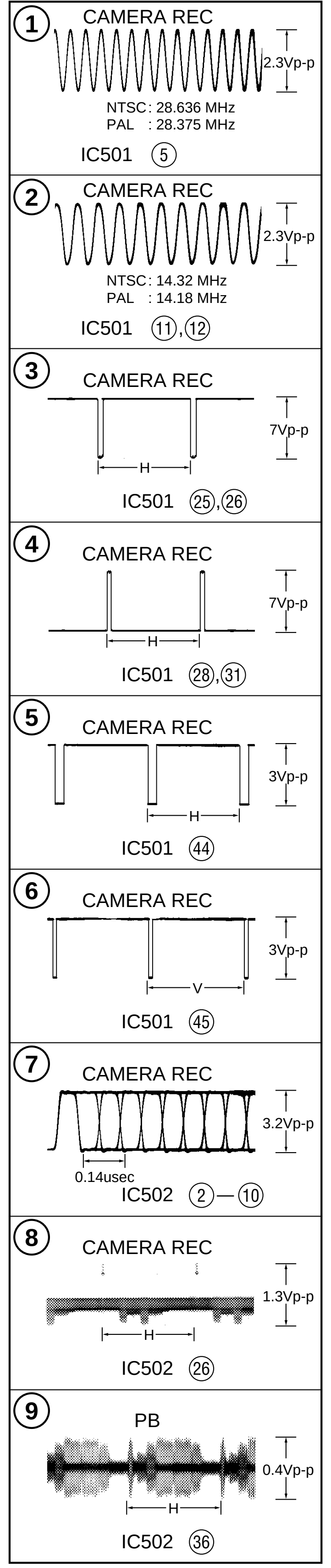
R476	A-17
R488	A-18
R490	A-18
R501	F-13
R502	F-13
R503	F-13
R507	E-13
R509	E-13
R513	D-13
R514	E-13
R521	D-13
R522	D-13
R523	D-13
R524	D-13
R525	D-13
R526	D-13
R527	B-17
R529	E-12
R551	G-11
R552	G-15
R553	G-13
R554	G-12
R556	G-13
R557	G-12
R558	F-15
R559	G-15
R560	G-15
R561	G-15
R562	G-15
R565	F-15
R568	G-13
R569	F-15
R571	F-15
R573	G-15
R574	G-14
R575	G-13
R576	G-13
R577	G-13
R605	G-16
R606	G-16
R610	G-16
R611	G-16
R613	G-16
R614	G-16
R650	F-16
R666	E-17
R667	E-17
R668	E-17
R669	E-17
R670	E-17
R671	E-17
R672	E-16
R673	E-16
R675	F-16
R676	F-16
R679	G-17
R680	G-17
R681	F-17
R682	F-17
R683	F-17
R684	F-17
R685	F-17
R693	F-17
R695	G-16
R696	G-16
R701	F-11
R702	F-11
R703	F-11
R706	F-11
R707	G-12
R708	F-12
R709	F-12
R710	F-12
R711	F-11
R712	E-12
R713	E-12
R714	E-12
R715	E-12
R720	E-12
R721	E-12
R722	E-12
R724	E-11
R725	F-11
R726	F-11
R916	E-16
R917	C-17
R918	C-17
R919	C-17
R920	C-17
X601	G-17
X602	F-15

CAMERA, Y/C PROCESSOR, IN/OUT, REC/PB HEAD AMP, SERVO/SYSTEM CONTROL, SERVO, AUDIO, MODE CONTROL
VC-195 (SIDE A)

CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/ TR640E/TR730E/TR840E/TR845E

- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.

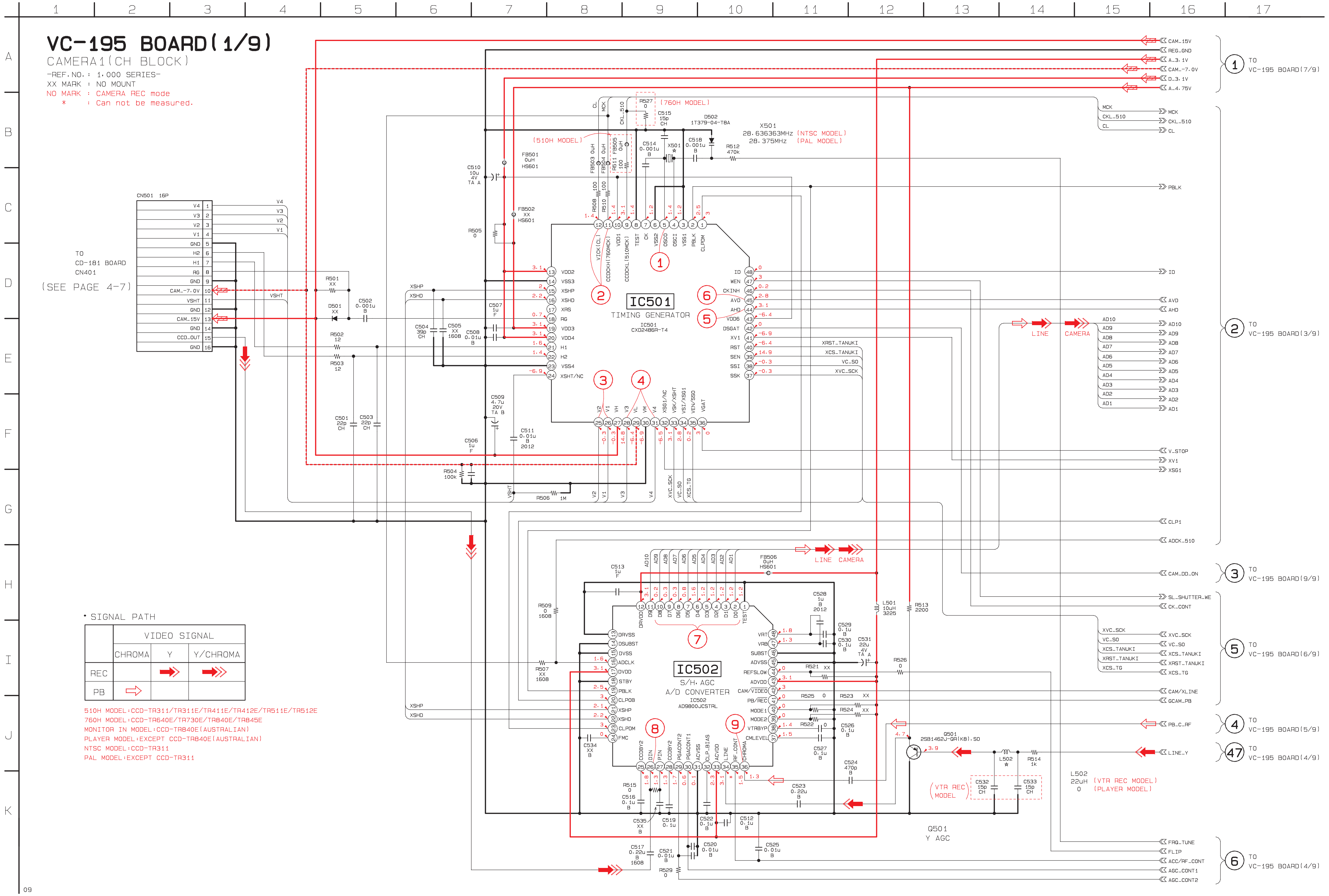
VC-195 BOARD (1/9)



VC-195 BOARD(1/9)

CAMERA1(CH BLOCK)

-REF.NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.



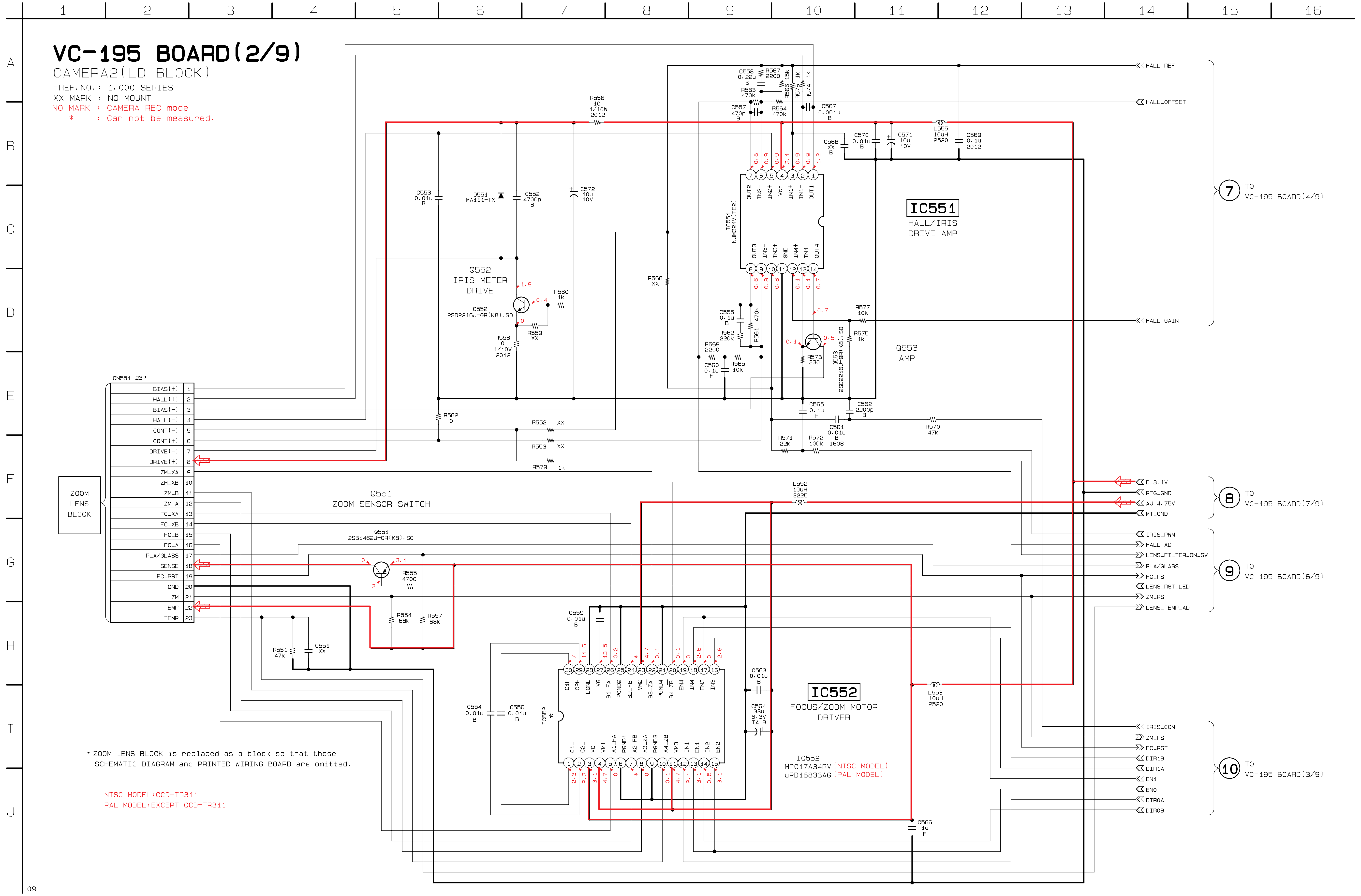
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J K
CN501 16P
V4 V3 V2 V1 GND H2 H1 RG GND CAM_-7.0V VSHT GND CAM_15V GND CCD_OUT GND
TO CD-181 BOARD CN401 (SEE PAGE 4-7)
IC501
TIMING GENERATOR
IC501 CXD2486R-T4
X501 28.636363MHz (NTSC MODEL) 28.375MHz (PAL MODEL)
(510H MODEL)
(760H MODEL)
D502 1T379-04-T8A
IC502
S/H, AGC A/D CONVERTER
IC502 AD9800JCSTRL
LINE CAMERA
L501 10uH 3225
Q501 2SB1462J-QR(K8).SO
Q501 Y AGC
L502 22uH (VTR REC MODEL) 0 (PLAYER MODEL)
CAM_15V REG_GND A_3.1V CAM_-7.0V D_3.1V A_4.75V
① TO VC-195 BOARD(7/9)
MCK CKL_510 CL PBLK ID AVD AHD AD10 AD9 AD8 AD7 AD6 AD5 AD4 AD3 AD2 AD1 V_STOP XV1 XSG1 CLP1 ADCK_510
② TO VC-195 BOARD(3/9)
CAM_DD_ON
③ TO VC-195 BOARD(9/9)
SL_SHUTTER_WE CK_CONT XVC_SCK VC_SO XCS_TANUKI XRST_TANUKI XCS_TG CAM/XLINE GCAM_PB
⑤ TO VC-195 BOARD(6/9)
PB_C_RF
④ TO VC-195 BOARD(5/9)
LINE_Y
(47) TO VC-195 BOARD(4/9)
FRQ_TUNE FLIP ACC/RF_CONT AGC_CONT1 AGC_CONT2
⑥ TO VC-195 BOARD(4/9)
09

- SIGNAL PATH

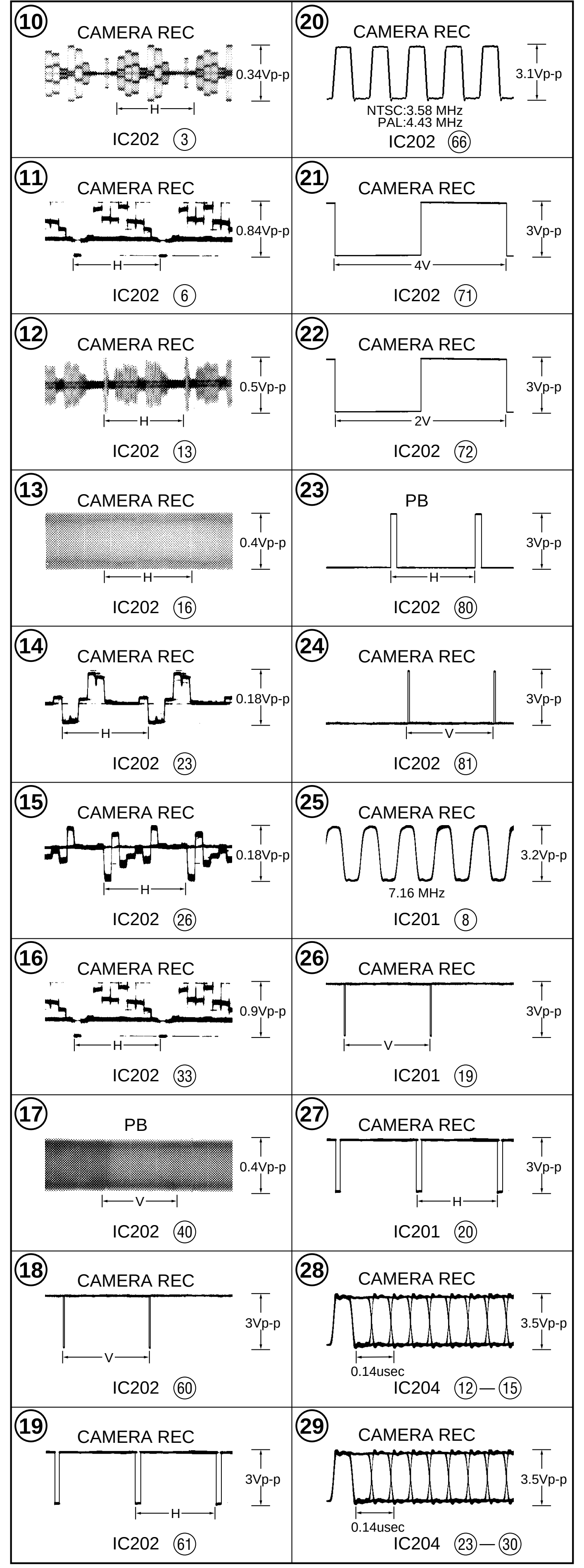
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	➡»
PB	⇨		

510H MODEL:CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E
760H MODEL:CCD-TR640E/TR730E/TR840E/TR845E
MONITOR IN MODEL:CCD-TR840E(AUSTRALIAN)
PLAYER MODEL:EXCEPT CCD-TR840E(AUSTRALIAN)
NTSC MODEL:CCD-TR311
PAL MODEL:EXCEPT CCD-TR311

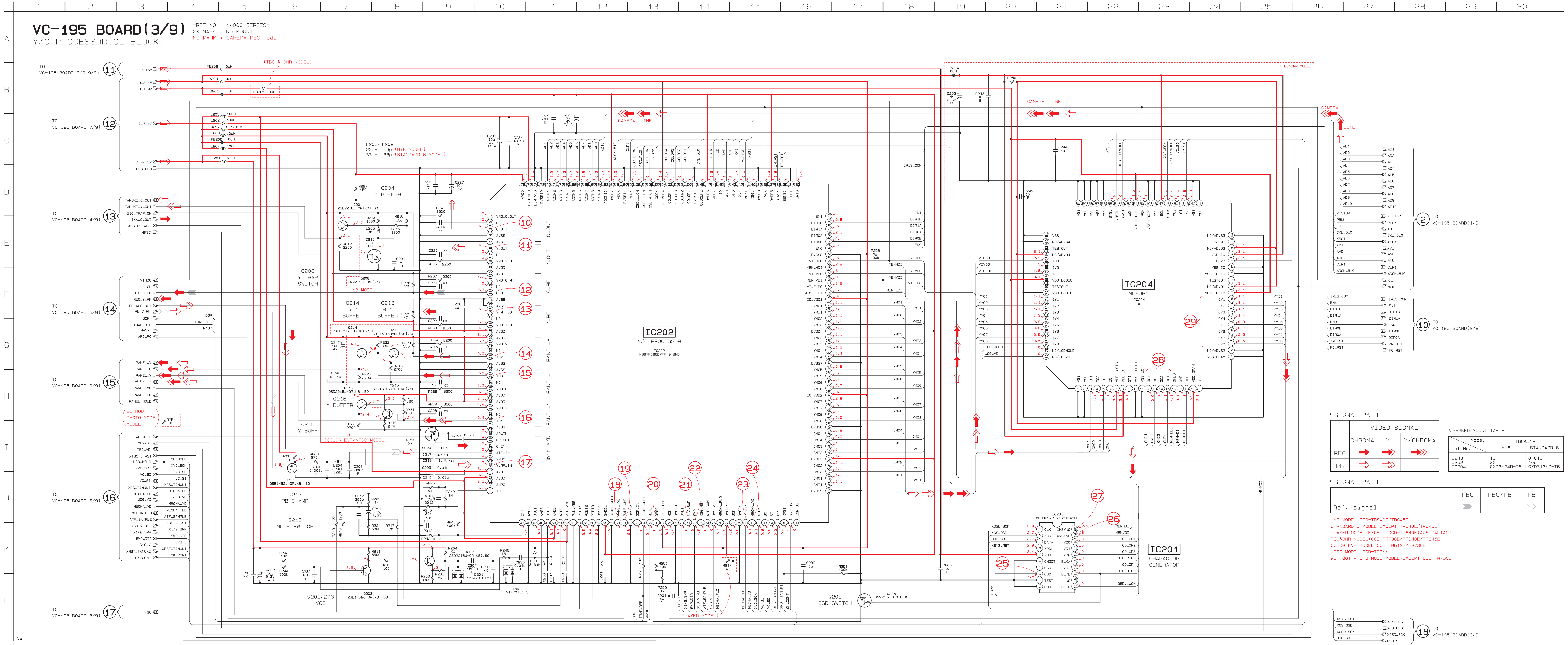
- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.


VC-195 BOARD(2/9)
CAMERA2(LD BLOCK)
-REF.NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.
ZOOM LENS BLOCK
CN551 23P
BIAS(+)
HALL(+)
BIAS(-)
HALL(-)
CONT(-)
CONT(+)
DRIVE(-)
DRIVE(+)
ZM_XA
ZM_XB
ZM_B
ZM_A
FC_XA
FC_XB
FC_B
FC_A
PLA/GLASS
SENSE
FC_RST
GND
ZM
TEMP
TEMP
Q551
ZOOM SENSOR SWITCH
Q551
2SB1462J-QR(K8).SO
R555 4700
R554 68k
R557 68k
R551 47k
C551 XX
Q552
IRIS METER DRIVE
Q552
2SD2216J-QR(K8).SO
D551 MA111-TX
C553 0.01u B
C552 4700p B
C572 10u 10V
R556 10 1/10W 2012
R558 0 1/10W 2012
R582 0
R552 XX
R553 XX
R579 1k
IC551
HALL/IRIS
DRIVE AMP
IC551
NJM324V(TE2)
OUT2
IN2-
IN2+
Vcc
IN1+
IN1-
OUT1
OUT3
IN3-
IN3+
GND
IN4+
IN4-
OUT4
Q553
AMP
Q553
2SD2216J-QR(K8).SO
L555 10uH 2520
L552 10uH 3225
IC552
FOCUS/ZOOM MOTOR
DRIVER
IC552
MPC17A34RV (NTSC MODEL)
uPD16833AG (PAL MODEL)
C1H
C2H
DGND
VG
B1_FA
PGND2
B2_FB
VM2
B3_ZA
PGND4
B4_ZB
EN4
IN4
EN3
IN3
C1L
C2L
VC
VM1
A1_FA
PGND1
A2_FB
A3_ZA
PGND3
A4_ZB
VM3
IN1
EN1
IN2
EN2
L553 10uH 2520
C566 1u F
HALL_REF
HALL_OFFSET
HALL_GAIN
7 TO VC-195 BOARD(4/9)
D_3.1V
REG_GND
AU_4.75V
MT_GND
8 TO VC-195 BOARD(7/9)
IRIS_PWM
HALL_AD
LENS_FILTER_ON_SW
PLA/GLASS
FC_RST
LENS_RST_LED
ZM_RST
LENS_TEMP_AD
9 TO VC-195 BOARD(6/9)
IRIS_COM
ZM_RST
FC_RST
DIR1B
DIR1A
EN1
EN0
DIR0A
DIR0B
10 TO VC-195 BOARD(3/9)
• ZOOM LENS BLOCK is replaced as a block so that these SCHEMATIC DIAGRAM and PRINTED WIRING BOARD are omitted.
NTSC MODEL:CCD-TR311
PAL MODEL:EXCEPT CCD-TR311
09

VC-195 BOARD (3/9)



- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.


VC-195 BOARD(3/9)
Y/C PROCESSOR(CL BLOCK)
-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
(TBC & DNR MODEL)
TO VC-195 BOARD(6/9,9/9)
TO VC-195 BOARD(7/9)
TO VC-195 BOARD(4/9)
TO VC-195 BOARD(5/9)
TO VC-195 BOARD(9/9)
TO VC-195 BOARD(6/9)
TO VC-195 BOARD(8/9)
TO VC-195 BOARD(1/9)
TO VC-195 BOARD(2/9)
E_3.15V
D_3.1V
FB202
FB203
FB201
FB205
Q204 Y BUFFER
Q208 Y TRAP SWITCH
Q214 B-Y BUFFER
Q213 R-Y BUFFER
Q216 Y BUFFER
Q215 Y BUFF
Q217 PB C AMP
Q218 MUTE SWITCH
Q202,203 VCO
Q205 OSD SWITCH
(Hi8 MODEL)
(STANDARD 8 MODEL)
(WITHOUT PHOTO MODE MODEL)
(COLOR EVF/NTSC MODEL)
(PLAYER MODEL)
CAMERA LINE
IC202 Y/C PROCESSOR
IC204 MEMORY
IC201 CHARACTOR GENERATOR
C_OUT
Y_OUT
C_RF
Y_RF
PANEL_V
PANEL_U
PANEL_Y
8bit A/D

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡»	➡»
PB	⇨	⇨»	

☆ MARKED:MOUNT TABLE

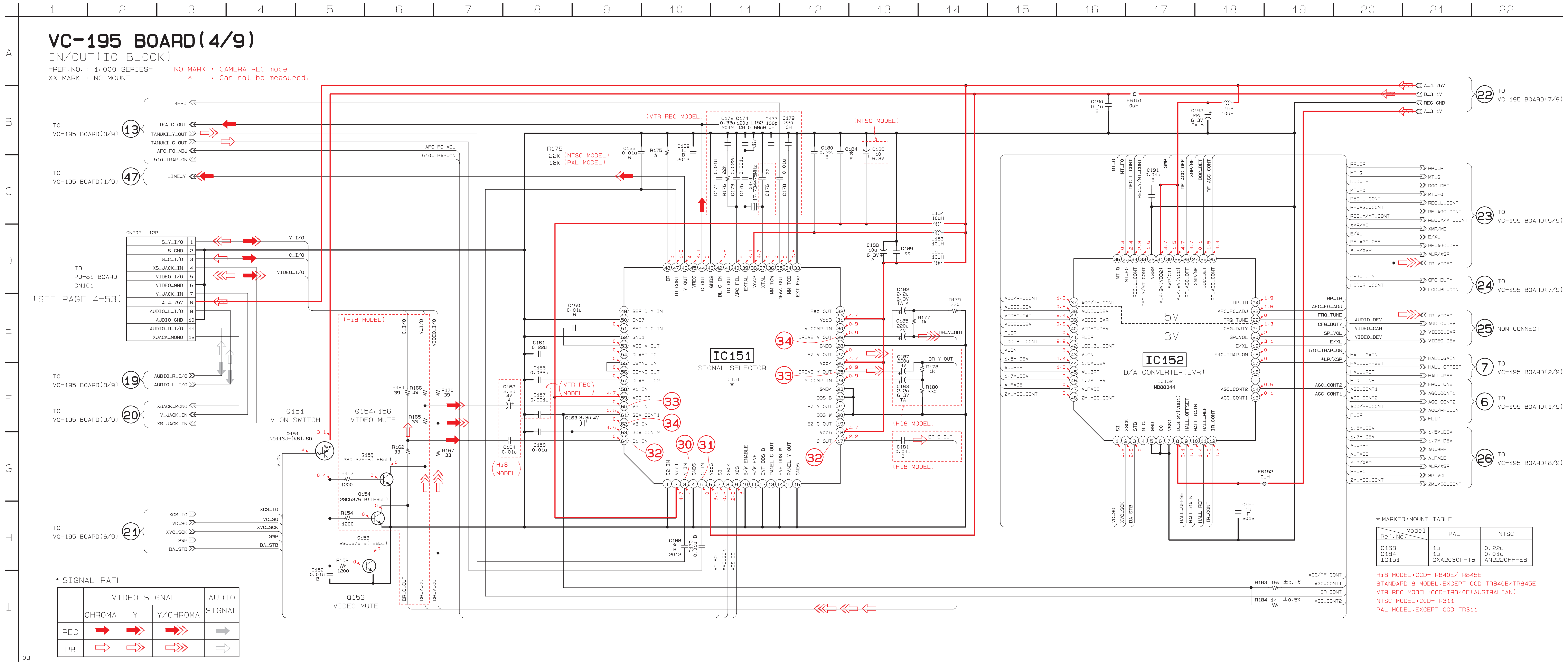
Model / Ref.No.	TBC&DNR Hi8	TBC&DNR STANDARD 8
C243 C252 IC204	1u XX CXD3124R-T6	0.01u 10u CXD3131R-T6

• SIGNAL PATH

	REC	REC/PB	PB
Ref. signal	➤		⇨

Hi8 MODEL:CCD-TR840E/TR845E
STANDARD 8 MODEL:EXCEPT TR840E/TR845E
PLAYER MODEL:EXCEPT CCD-TR840E(AUSTRALIAN)
TBC&DNR MODEL:CCD-TR730E/TR840E/TR845E
COLOR EVF MODEL:CCD-TR512E/TR730E
NTSC MODEL:CCD-TR311
WITHOUT PHOTO MODE MODEL:EXCEPT CCD-TR730E

- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.


VC-195 BOARD(4/9)
IN/OUT(IO BLOCK)
-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.
TO VC-195 BOARD(3/9) ⑬
TO VC-195 BOARD(1/9) 47
TO PJ-81 BOARD CN101 (SEE PAGE 4-53)
TO VC-195 BOARD(8/9) ⑲
TO VC-195 BOARD(9/9) ⑳
TO VC-195 BOARD(6/9) ㉑
Q151 V ON SWITCH
Q154,156 VIDEO MUTE
Q153 VIDEO MUTE
IC151 SIGNAL SELECTOR
IC152 D/A CONVERTER(EVR)
TO VC-195 BOARD(7/9) ㉒
TO VC-195 BOARD(5/9) ㉓
TO VC-195 BOARD(7/9) ㉔
㉕ NON CONNECT
TO VC-195 BOARD(2/9) ⑦
TO VC-195 BOARD(1/9) ⑥
TO VC-195 BOARD(8/9) ㉖
09

• SIGNAL PATH

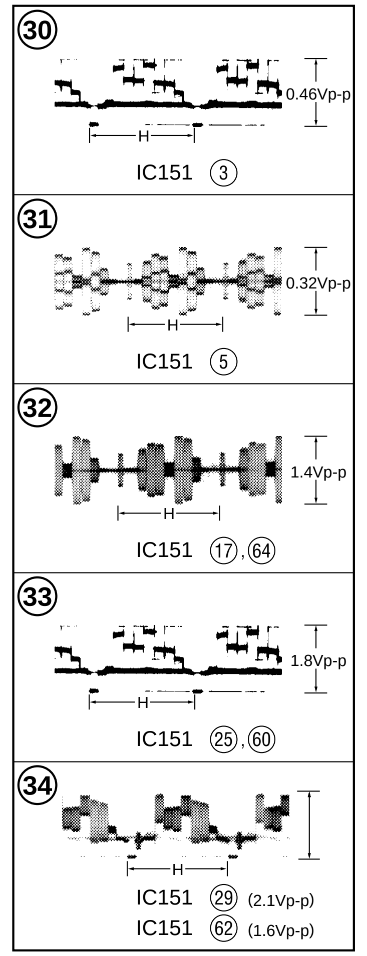
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	➡
PB	⇨	⇨≫	⇨⋙	⇨

☆ MARKED:MOUNT TABLE

Model / Ref.No.	PAL	NTSC
C168 C184 IC151	1u 1u CXA2030R-T6	0.22u 0.01u AN2220FH-EB

Hi8 MODEL:CCD-TR840E/TR845E
STANDARD 8 MODEL:EXCEPT CCD-TR840E/TR845E
VTR REC MODEL:CCD-TR840E(AUSTRALIAN)
NTSC MODEL:CCD-TR311
PAL MODEL:EXCEPT CCD-TR311

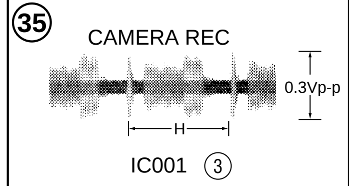
VC-195 BOARD (4/9)
CAMERA REC



- For schematic diagrams.
- Refer to page 4–13 for Printed Wiring Board.

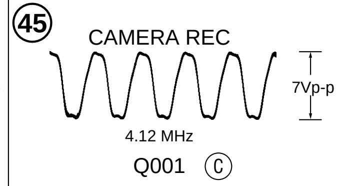
VC-195 BOARD (5/9)

(35)



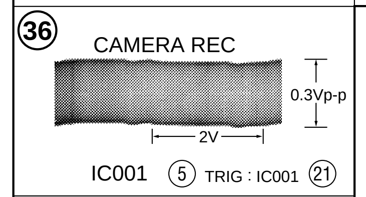
IC001 (3)

(45)



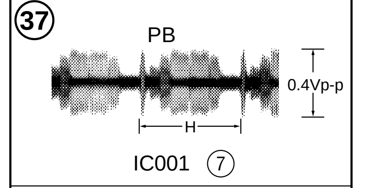
Q001 (C)

(36)



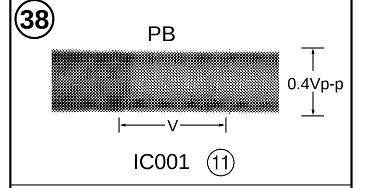
IC001 (5) TRIG : IC001 (21)

(37)



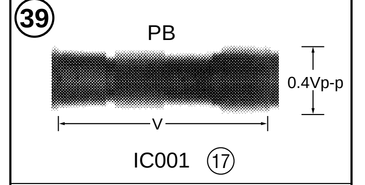
IC001 (7)

(38)



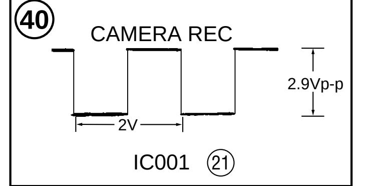
IC001 (11)

(39)



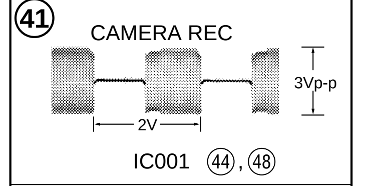
IC001 (17)

(40)



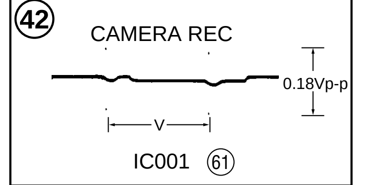
IC001 (21)

(41)



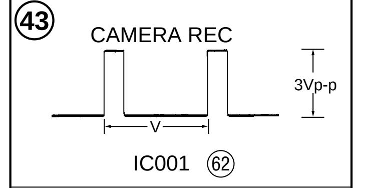
IC001 (44), (48)

(42)



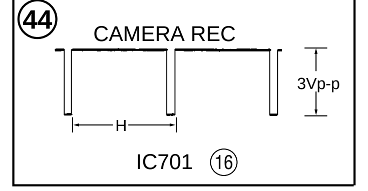
IC001 (61)

(43)



IC001 (62)

(44)

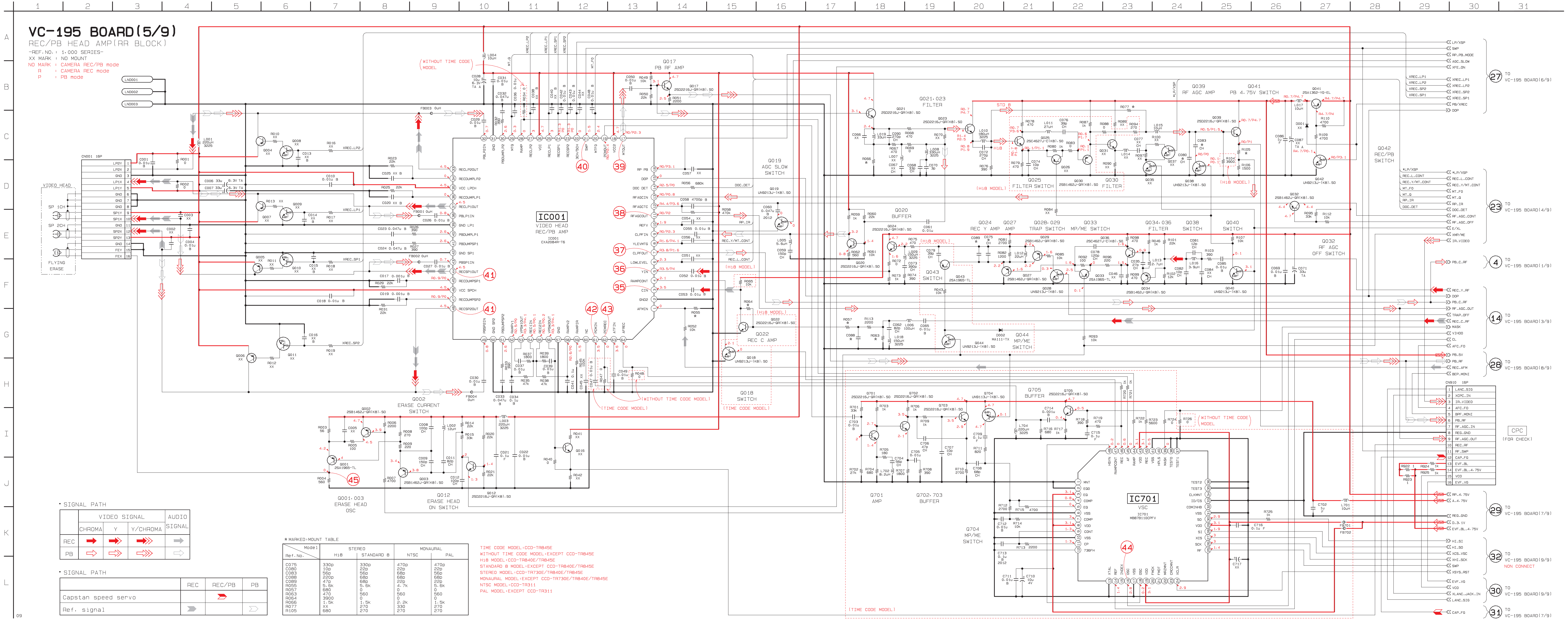


IC701 (16)

VC-195 BOARD(5/9)

REC/PB HEAD AMP(RR BLOCK)

-REF.NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC/PB mode
R : CAMERA REC mode
P : PB mode


IC001
VIDEO HEAD
REC/PB AMP
CXA2084R-T6
IC701
VSC
Q017 PB RF AMP
Q019 AGC SLOW SWITCH
Q020 BUFFER
Q021, 023 FILTER
Q039 RF AGC AMP
Q041 PB 4.75V SWITCH
Q042 REC/PB SWITCH
Q032 RF AGC OFF SWITCH
Q022 REC C AMP
Q018 SWITCH
Q002 ERASE CURRENT SWITCH
Q001, 003 ERASE HEAD OSC
Q012 ERASE HEAD ON SWITCH
Q701 AMP
Q702, 703 BUFFER
Q704 MP/ME SWITCH
Q705 BUFFER
VIDEO HEAD
FLYING ERASE
(WITHOUT TIME CODE MODEL)
(TIME CODE MODEL)
(Hi8 MODEL)
TO VC-195 BOARD(6/9)
TO VC-195 BOARD(4/9)
TO VC-195 BOARD(1/9)
TO VC-195 BOARD(3/9)
TO VC-195 BOARD(8/9)
TO VC-195 BOARD(7/9)
TO VC-195 BOARD(9/9)
NON CONNECT
CPC
(FOR CHECK)

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡≫	➡⋙	➡
PB	⇨	⇨≫	⇨⋙	⇨

• SIGNAL PATH

	REC	REC/PB	PB
Capstan speed servo		➤	
Ref. signal	➤		➢

☆MARKED:MOUNT TABLE

Model / Ref.No.	STEREO		MONAURAL	
	Hi8	STANDARD 8	NTSC	PAL
C075	330p	330p	470p	470p
C080	10p	22p	22p	22p
C083	56p	56p	68p	56p
C088	220p	68p	68p	68p
C089	47p	68p	22p	22p
R055	5.6k	5.6k	4.7k	5.6k
R057	680	0	0	0
R063	470	560	560	560
R064	3900	0	0	0
R066	1.5k	1.5k	2.2k	1.5k
R077	XX	270	330	270
R105	680	270	270	270

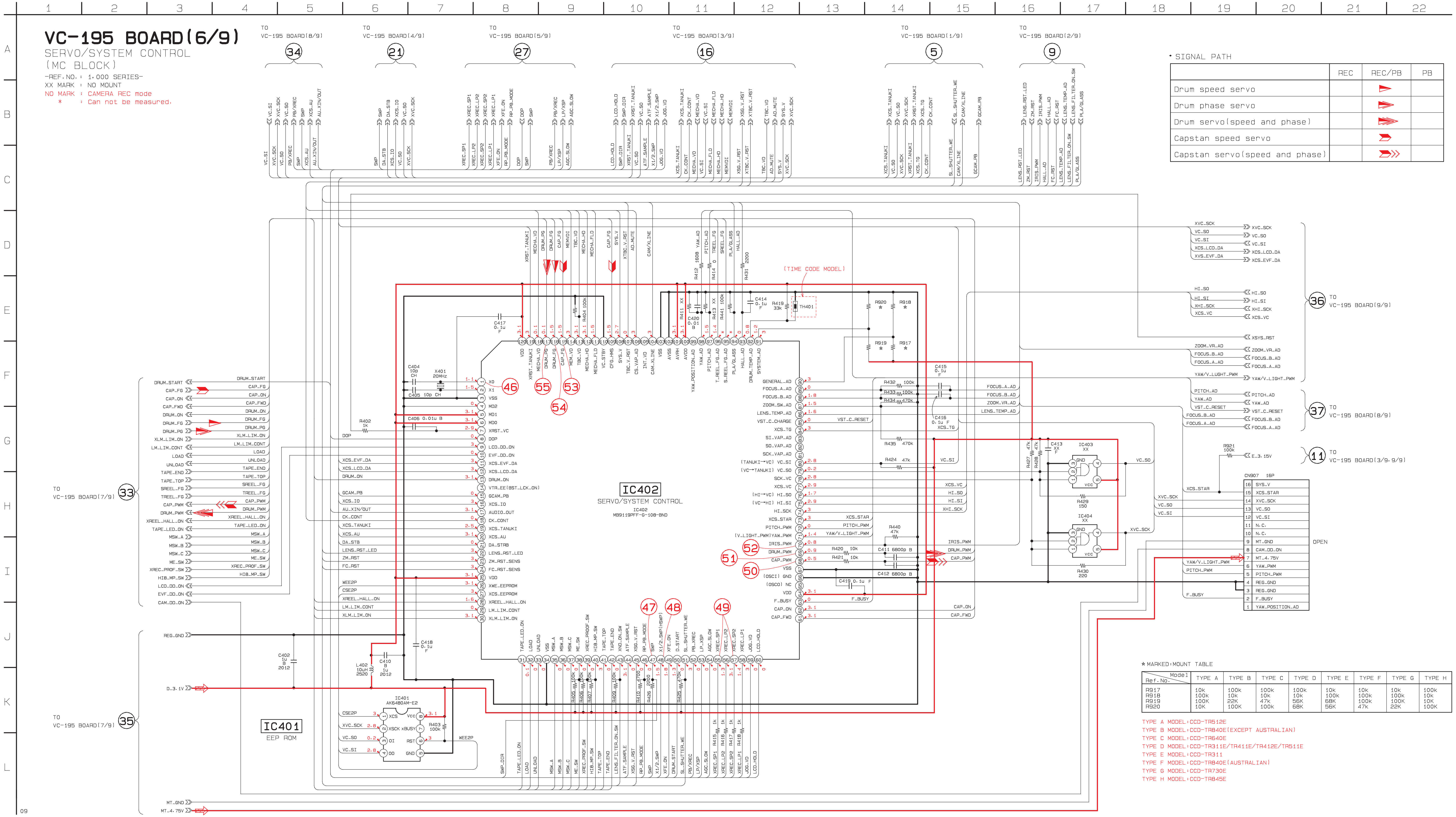
TIME CODE MODEL:CCD-TR845E
WITHOUT TIME CODE MODEL:EXCEPT CCD-TR845E
Hi8 MODEL:CCD-TR840E/TR845E
STANDARD 8 MODEL:EXCEPT CCD-TR840E/TR845E
STEREO MODEL:CCD-TR730E/TR840E/TR845E
MONAURAL MODEL:EXCEPT CCD-TR730E/TR840E/TR845E
NTSC MODEL:CCD-TR311
PAL MODEL:EXCEPT CCD-TR311

- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD(6/9)

SERVO/SYSTEM CONTROL
(MC BLOCK)

-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.


TO VC-195 BOARD(8/9) (34)
TO VC-195 BOARD(4/9) (21)
TO VC-195 BOARD(5/9) (27)
TO VC-195 BOARD(3/9) (16)
TO VC-195 BOARD(1/9) (5)
TO VC-195 BOARD(2/9) (9)
TO VC-195 BOARD(7/9) (33)
TO VC-195 BOARD(7/9) (35)
TO VC-195 BOARD(9/9) (36)
TO VC-195 BOARD(8/9) (37)
TO VC-195 BOARD(3/9,9/9) (11)
IC402
SERVO/SYSTEM CONTROL
IC402
MB9119PFF-G-108-BND
IC401
EEP ROM
IC401 AK6480AM-E2
IC403
IC404
X401 20MHz
TH401
(TIME CODE MODEL)
CN907 16P
OPEN
D.3.1V
MT_GND
MT_4.75V
REG_GND
(46)
(47)
(48)
(49)
(50)
(51)
(52)
(53)
(54)
(55)

• SIGNAL PATH

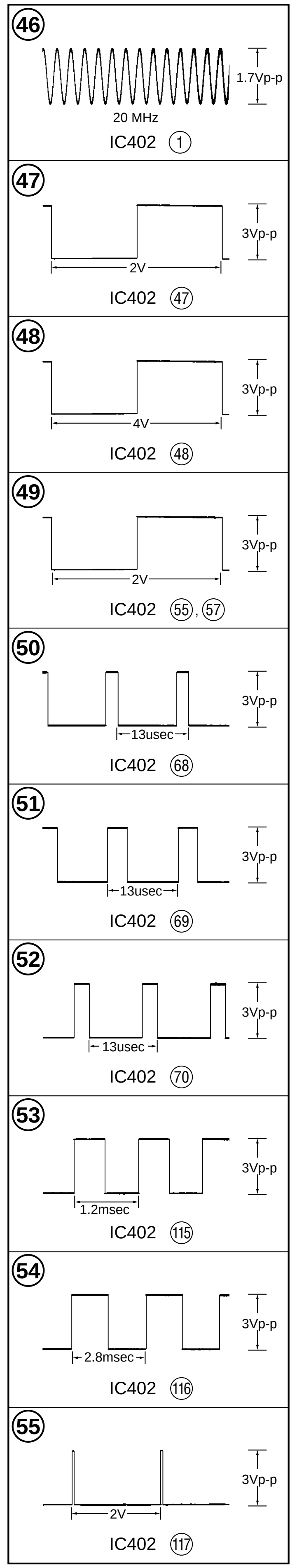
	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		▶≫	
Drum servo(speed and phase)		▶≫≫	
Capstan speed servo		➡	
Capstan servo(speed and phase)		➡≫	

☆ MARKED:MOUNT TABLE

Model / Ref.No.	TYPE A	TYPE B	TYPE C	TYPE D	TYPE E	TYPE F	TYPE G	TYPE H
R917	10k	100k	100k	100k	10k	10k	10k	100k
R918	100k	10k	10k	10k	100k	100k	100k	10k
R919	100K	22K	47k	56K	68K	100K	100K	10K
R920	10K	100K	100k	68K	56K	47k	22K	100K

TYPE A MODEL:CCD-TR512E
TYPE B MODEL:CCD-TR840E(EXCEPT AUSTRALIAN)
TYPE C MODEL:CCD-TR640E
TYPE D MODEL:CCD-TR311E/TR411E/TR412E/TR511E
TYPE E MODEL:CCD-TR311
TYPE F MODEL:CCD-TR840E(AUSTRALIAN)
TYPE G MODEL:CCD-TR730E
TYPE H MODEL:CCD-TR845E

VC-195 BOARD (6/9)
CAMERA REC



• For schematic diagrams. • Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD (7/9)

SERVO (SB BLOCK)

-REF. NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
* : Can not be measured.

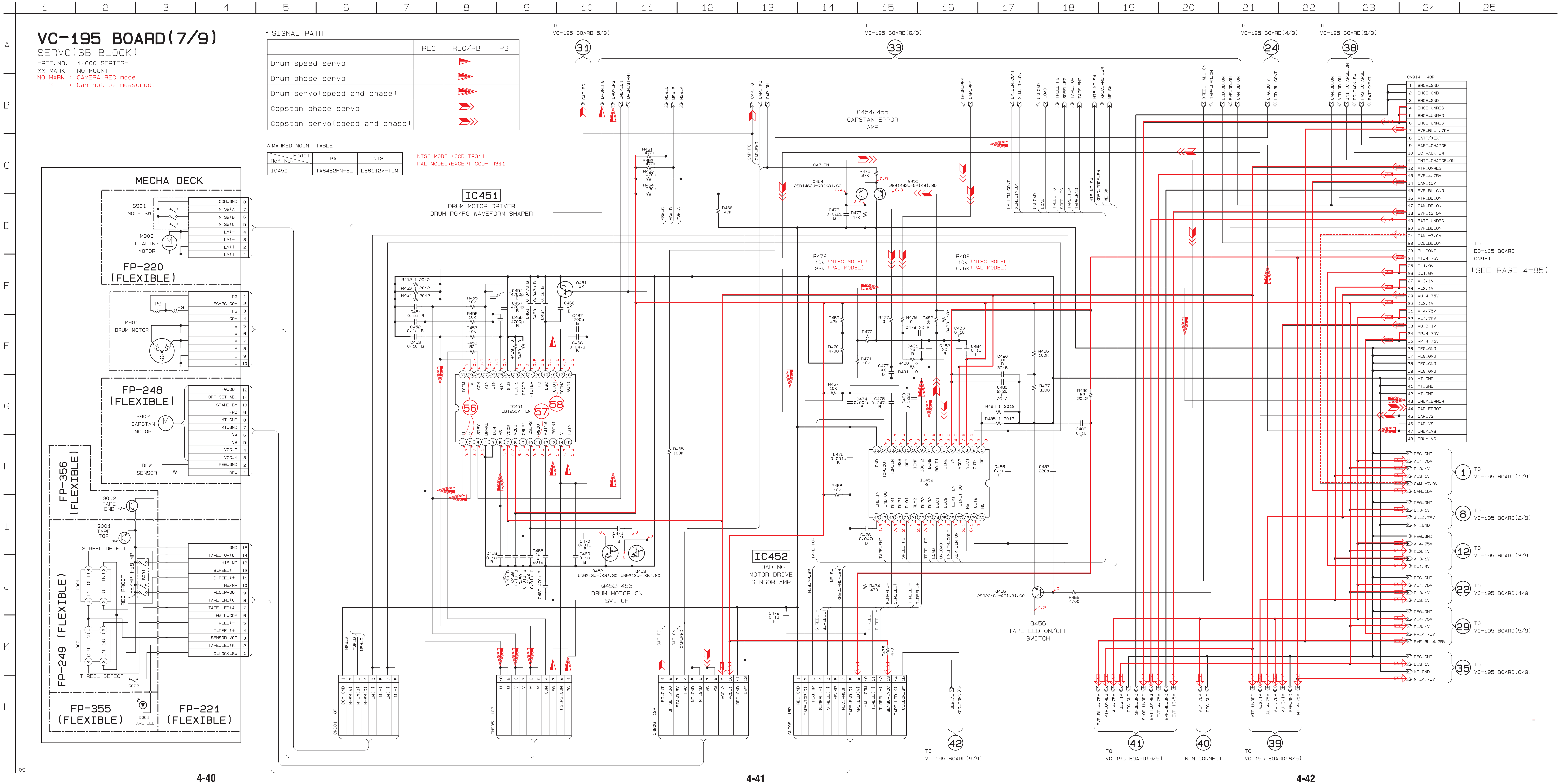
• SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		➢	
Drum phase servo		➢➢	
Drum servo (speed and phase)		➢➢➢	
Capstan phase servo		➤›	
Capstan servo (speed and phase)		➤››	

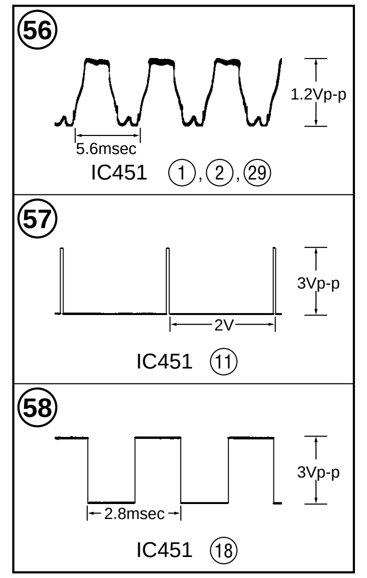
☆ MARKED : MOUNT TABLE

Model / Ref. No.	PAL	NTSC
IC452	TA8482FN-EL	LB8112V-TLM

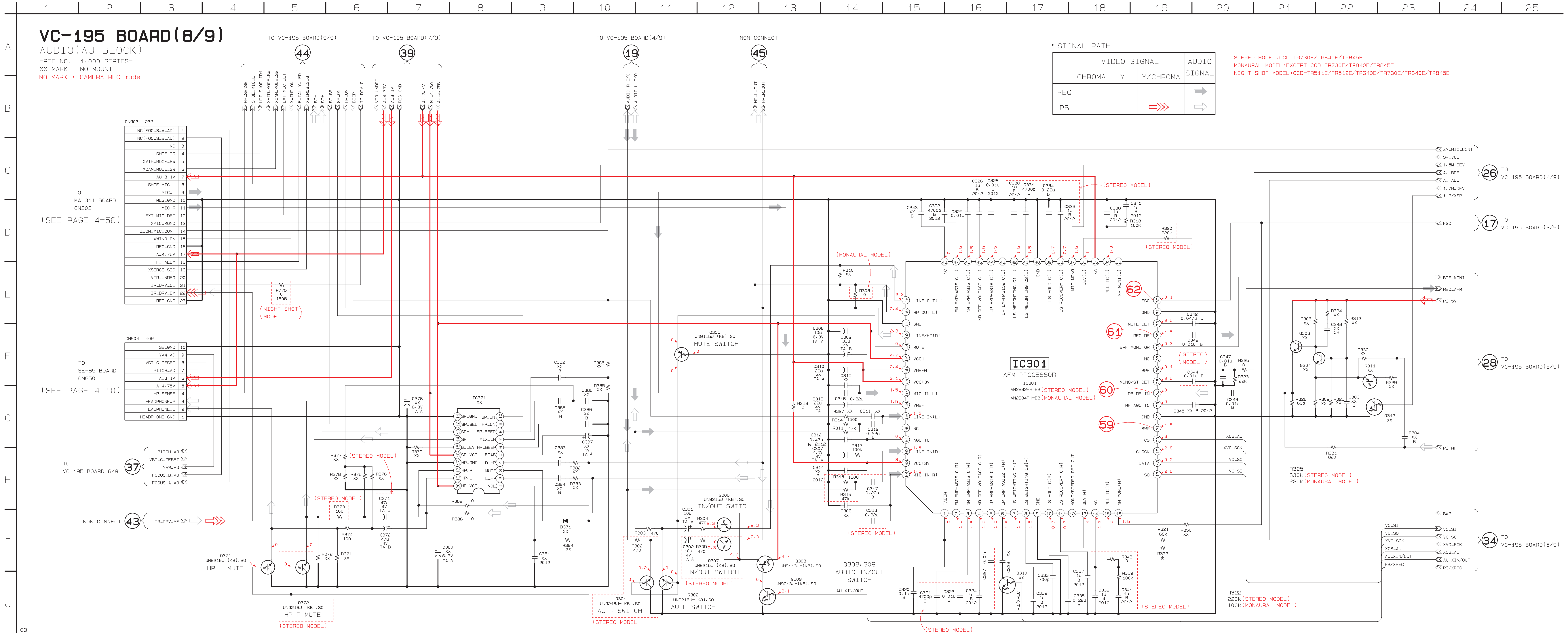
NTSC MODEL : CCD-TR311
PAL MODEL : EXCEPT CCD-TR311


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
A B C D E F G H I J K L
MECHA DECK
S901 MODE SW
M903 LOADING MOTOR
COM_GND
M-SW(A)
M-SW(B)
M-SW(C)
LM(-)
LM(+)
FP-220 (FLEXIBLE)
M901 DRUM MOTOR
PG
FG
FG-PG_COM
COM
U V W
FP-248 (FLEXIBLE)
M902 CAPSTAN MOTOR
FG_OUT
OFF_SET_ADJ
STAND_BY
FRC
MT_GND
VS
VCC_2
VCC_1
REG_GND
DEW
DEW SENSOR
FP-356 (FLEXIBLE)
Q002 TAPE END
Q001 TAPE TOP
S REEL DETECT
H001
H002
T REEL DETECT
S002
S001
REC PROOF
ME/MP
FP-249 (FLEXIBLE)
GND
TAPE_TOP(C)
HI8_MP
S_REEL(-)
S_REEL(+)
ME/MP
REC_PROOF
TAPE_END(C)
TAPE_LED(A)
HALL_COM
T_REEL(-)
T_REEL(+)
SENSOR_VCC
TAPE_LED(K)
C_LOCK_SW
FP-355 (FLEXIBLE)
D001 TAPE LED
FP-221 (FLEXIBLE)
CN901 8P
CN905 10P
CN906 12P
CN908 15P
IC451
DRUM MOTOR DRIVER
DRUM PG/FG WAVEFORM SHAPER
IC451 LB1950V-TLM
56 57 58
Q451 XX
Q452, 453 DRUM MOTOR ON SWITCH
Q452 UN9213J-(K8).SO
Q453 UN9213J-(K8).SO
IC452
LOADING MOTOR DRIVE SENSOR AMP
Q454, 455 CAPSTAN ERROR AMP
Q454 2SB1462J-QR(K8).SO
Q455 2SB1462J-QR(K8).SO
Q456 2SD2216J-QR(K8).SO
Q456 TAPE LED ON/OFF SWITCH
R472 10k (NTSC MODEL) 22k (PAL MODEL)
R482 10k (NTSC MODEL) 5.6k (PAL MODEL)
TO VC-195 BOARD (5/9) 31
TO VC-195 BOARD (6/9) 33
TO VC-195 BOARD (4/9) 24
TO VC-195 BOARD (9/9) 38
CN914 48P
1 SHOE_GND
2 SHOE_GND
3 SHOE_GND
4 SHOE_UNREG
5 SHOE_UNREG
6 SHOE_UNREG
7 EVF_BL_4.75V
8 BATT/XEXT
9 FAST_CHARGE
10 DC_PACK_SW
11 INIT_CHARGE_ON
12 VTR_UNREG
13 EVF_4.75V
14 CAM_15V
15 EVF_BL_GND
16 VTR_DD_ON
17 CAM_DD_ON
18 EVF_13.5V
19 BATT_UNREG
20 EVF_DD_ON
21 CAM_-7.0V
22 LCD_DD_ON
23 BL_CONT
24 MT_4.75V
25 D_1.9V
26 D_1.9V
27 A_3.1V
28 A_3.1V
29 AU_4.75V
30 D_3.1V
31 A_4.75V
32 A_4.75V
33 AU_3.1V
34 RP_4.75V
35 RP_4.75V
36 REG_GND
37 REG_GND
38 REG_GND
39 REG_GND
40 MT_GND
41 MT_GND
42 MT_GND
43 DRUM_ERROR
44 CAP_ERROR
45 CAP_VS
46 CAP_VS
47 DRUM_VS
48 DRUM_VS
TO DD-105 BOARD CN931 (SEE PAGE 4-85)
TO VC-195 BOARD (1/9) 1
TO VC-195 BOARD (2/9) 8
TO VC-195 BOARD (3/9) 12
TO VC-195 BOARD (4/9) 22
TO VC-195 BOARD (5/9) 29
TO VC-195 BOARD (6/9) 35
TO VC-195 BOARD (9/9) 42
TO VC-195 BOARD (9/9) 41
NON CONNECT 40
TO VC-195 BOARD (8/9) 39

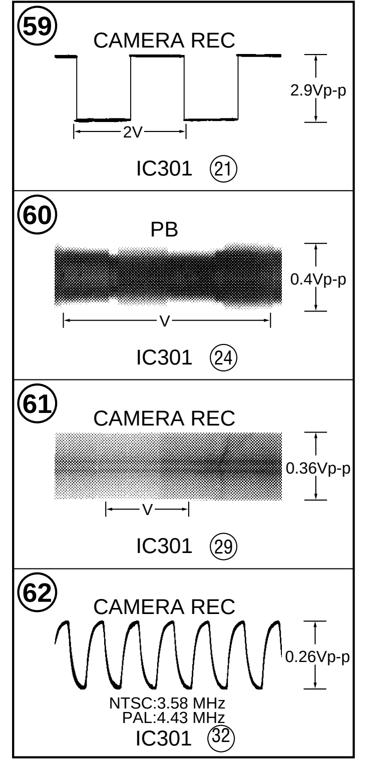
VC-195 BOARD (7/9)
CAMERA REC



- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.


VC-195 BOARD(8/9)
AUDIO(AU BLOCK)
-REF.NO.: 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
TO VC-195 BOARD(9/9)
44
TO VC-195 BOARD(7/9)
39
TO VC-195 BOARD(4/9)
19
NON CONNECT
45
• SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB
STEREO MODEL:CCD-TR730E/TR840E/TR845E
MONAURAL MODEL:EXCEPT CCD-TR730E/TR840E/TR845E
NIGHT SHOT MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
CN903 23P
TO MA-311 BOARD CN303
(SEE PAGE 4-56)
CN904 10P
TO SE-65 BOARD CN650
(SEE PAGE 4-10)
TO VC-195 BOARD(6/9)
37
NON CONNECT
43
IC371
IC301
AFM PROCESSOR
IC301
AN2982FH-E9 (STEREO MODEL)
AN2984FH-E9 (MONAURAL MODEL)
Q305 UN9115J-(K8).SO MUTE SWITCH
Q306 UN9115J-(K8).SO IN/OUT SWITCH
Q307 UN9115J-(K8).SO IN/OUT SWITCH
Q308, 309 AUDIO IN/OUT SWITCH
Q301 UN9216J-(K8).SO AU R SWITCH
Q302 UN9215J-(K8).SO AU L SWITCH
Q371 UN9216J-(K8).SO HP L MUTE
Q372 UN9216J-(K8).SO HP R MUTE
(STEREO MODEL)
(MONAURAL MODEL)
(NIGHT SHOT MODEL)
TO VC-195 BOARD(4/9)
26
TO VC-195 BOARD(3/9)
17
TO VC-195 BOARD(5/9)
28
TO VC-195 BOARD(6/9)
34
59
60
61
62
09

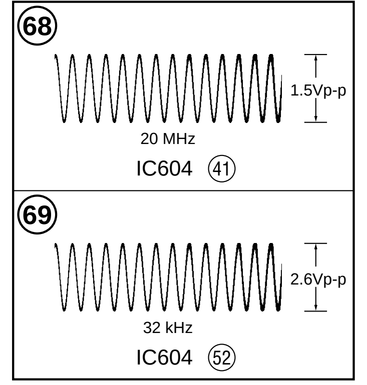
VC-195 BOARD (8/9)

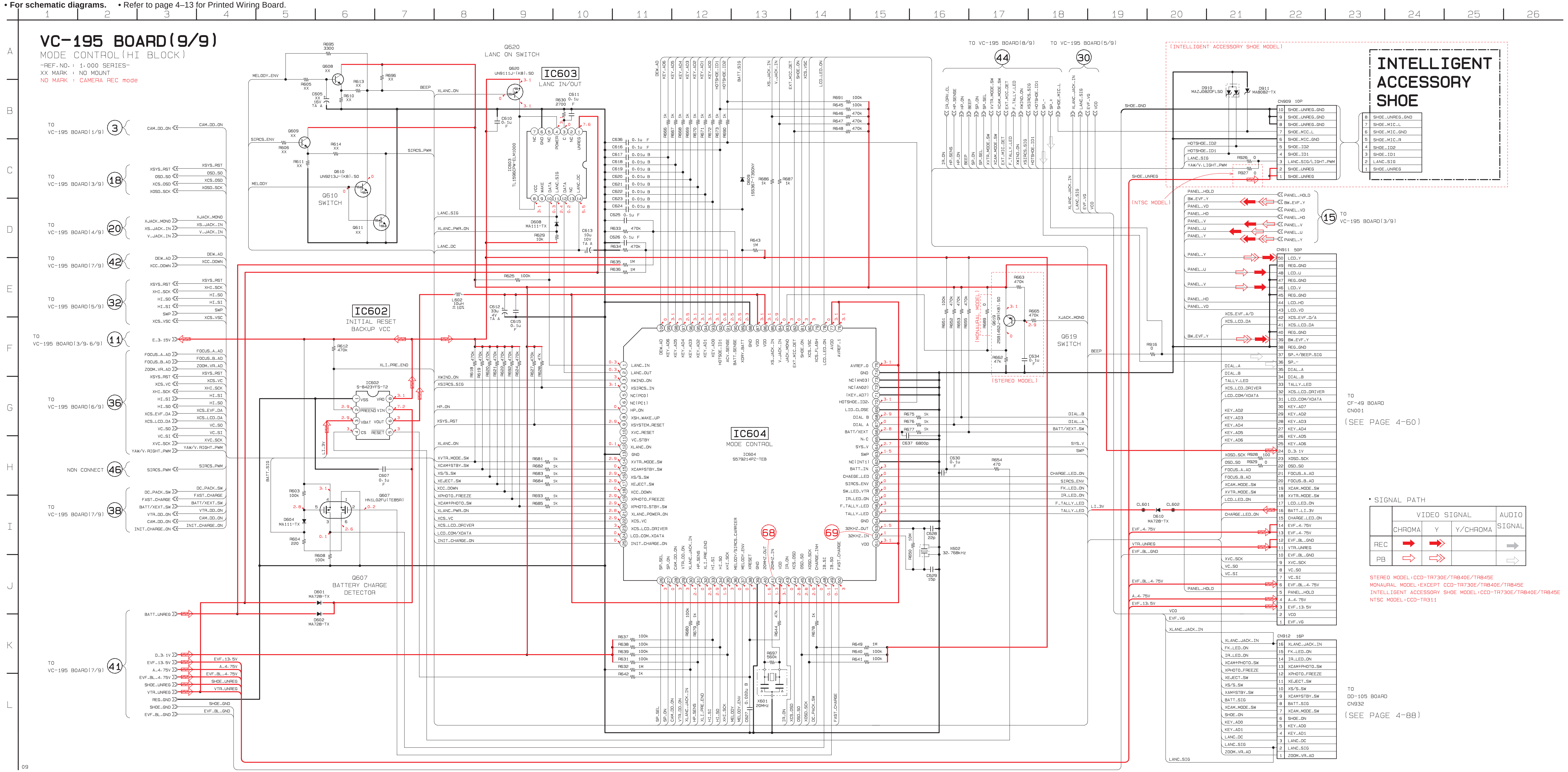


CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/
TR640E/TR730E/TR840E/TR845E

- **For schematic diagrams.**
- Refer to page 4–13 for Printed Wiring Board.

VC-195 BOARD (9/9)





VC-195 BOARD(9/9)
MODE CONTROL(HI BLOCK)
-REF.NO. : 1,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
IC602
INITIAL RESET BACKUP VCC
IC603
LANC IN/OUT
Q620
LANC ON SWITCH
Q610
SWITCH
IC604
MODE CONTROL
Q607
BATTERY CHARGE DETECTOR
Q619
SWITCH
INTELLIGENT ACCESSORY SHOE
(INTELLIGENT ACCESSORY SHOE MODEL)
(NTSC MODEL)
(STEREO MODEL)
TO VC-195 BOARD(1/9)
TO VC-195 BOARD(3/9)
TO VC-195 BOARD(4/9)
TO VC-195 BOARD(7/9)
TO VC-195 BOARD(5/9)
TO VC-195 BOARD(3/9・6/9)
TO VC-195 BOARD(6/9)
NON CONNECT
TO VC-195 BOARD(8/9)
TO CF-49 BOARD CN001 (SEE PAGE 4-60)
TO DD-105 BOARD CN932 (SEE PAGE 4-88)

• SIGNAL PATH

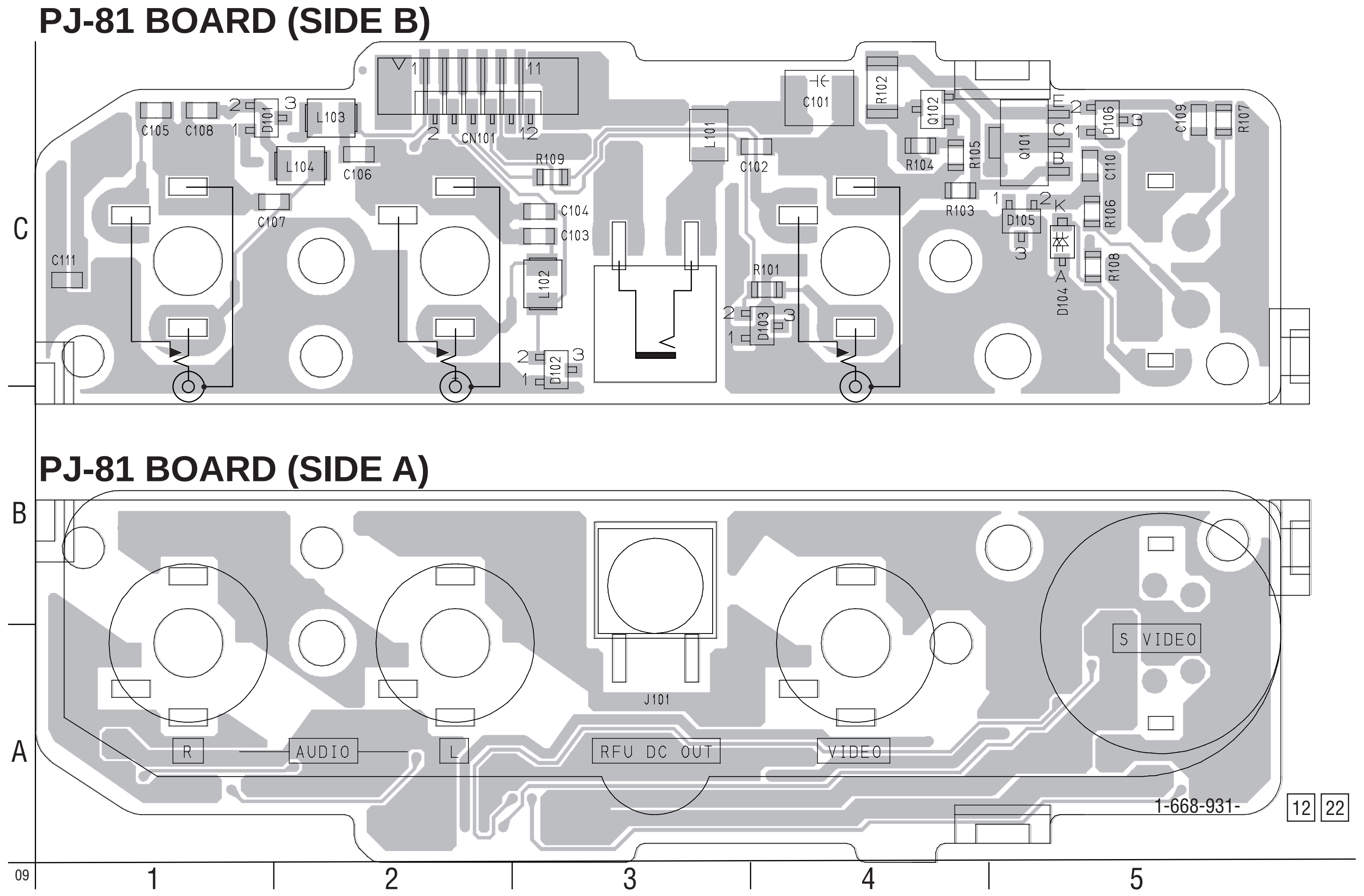
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		➡
PB	⇨	⇨		⇨

STEREO MODEL:CCD-TR730E/TR840E/TR845E
MONAURAL MODEL:EXCEPT CCD-TR730E/TR840E/TR845E
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR730E/TR840E/TR845E
NTSC MODEL:CCD-TR311

MODE CONTROL
VC-195 (9/9)

PJ-81 (AV IN/OUT) PRINTED WIRING BOARD

– Ref No. PJ-81 BOARD: 3,000 series –

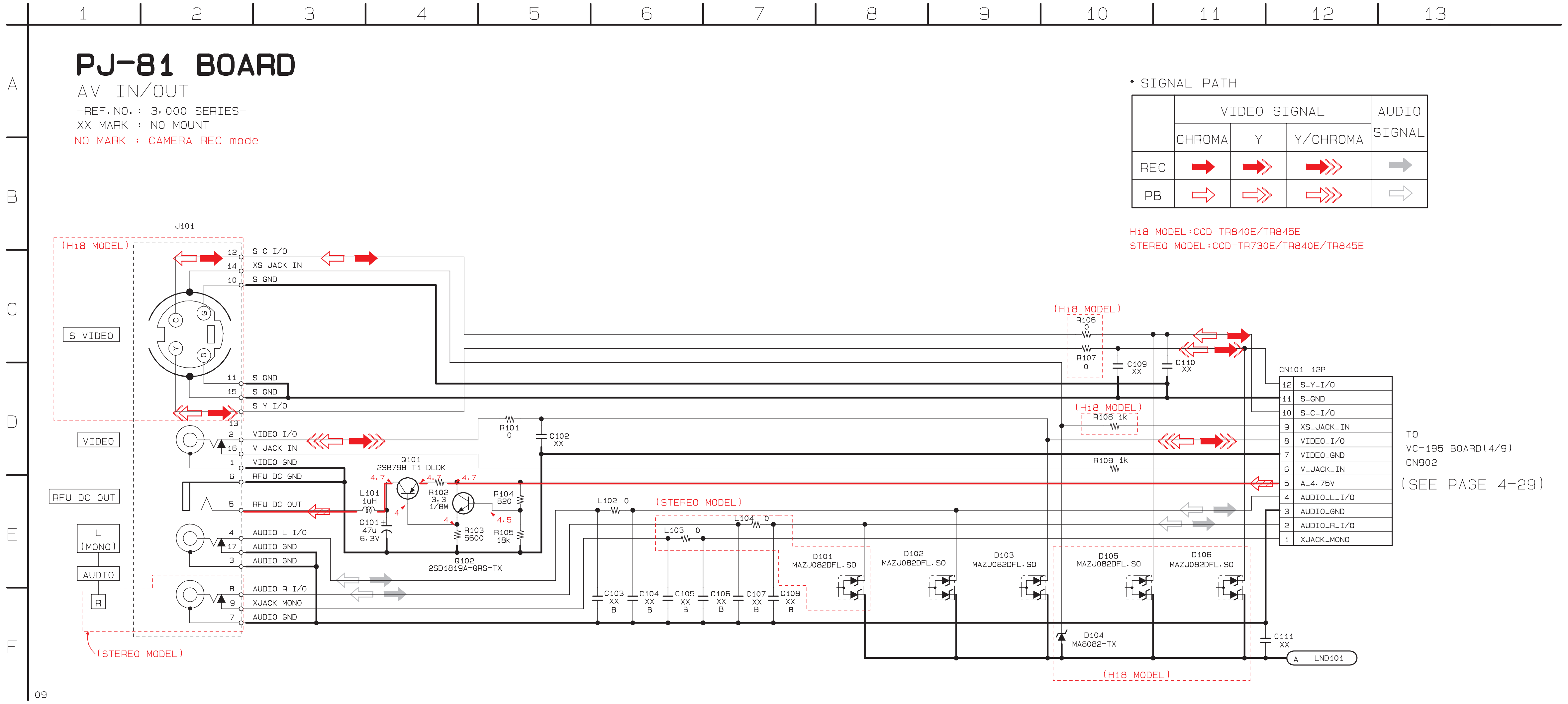

PJ-81 BOARD (SIDE B)

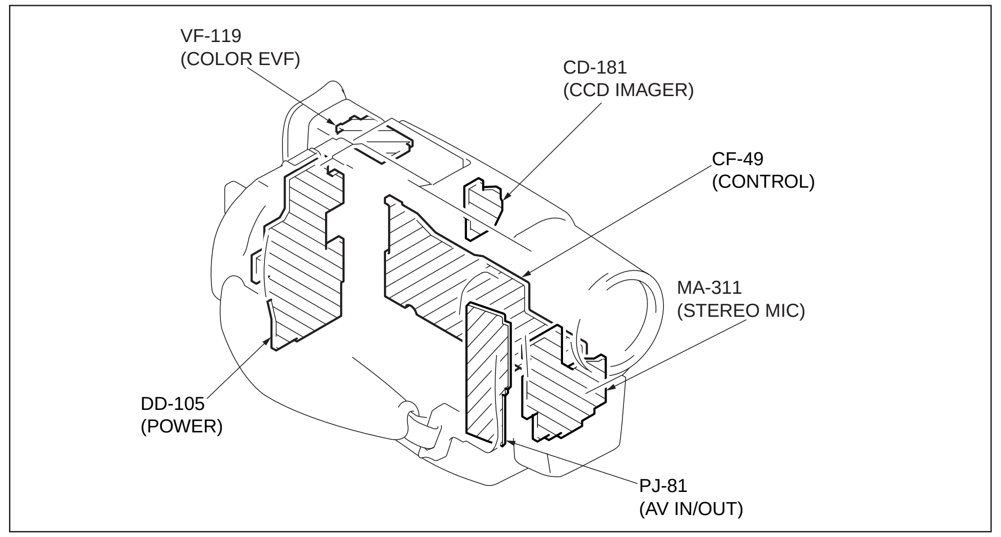
PJ-81 BOARD (SIDE A)

C105
C108
D101
L103
L104
C106
C107
CN101
R109
C104
C103
L102
D102
J101
C102
C101
R102
Q102
R104
R105
R103
Q101
D105
R101
D103
D104
D107
C110
D106
R106
R108
C109
R107
C111
R
AUDIO
L
RFU DC OUT
VIDEO
S VIDEO
1-668-931-
12
22
A
B
C
09
1
2
3
4
5

PJ-81 BOARD

C101	C-4
C102	C-4
C103	C-3
C104	C-3
C105	C-1
C106	C-2
C107	C-1
C108	C-1
C109	C-5
C110	C-5
C111	C-1
CN101	C-2
D101	C-1
D102	C-3
D103	C-4
D105	C-5
D106	C-5
D107	C-5
J101	A-3
L101	C-3
L102	C-3
L103	C-2
L104	C-2
Q101	C-5
Q102	C-4
R101	C-4
R102	C-4
R103	C-4
R104	C-4
R105	C-4
R106	C-5
R107	C-5
R108	C-5
R109	C-3

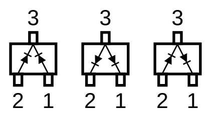

PJ-81 BOARD
AV IN/OUT
-REF.NO.: 3,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
• SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB
Hi8 MODEL:CCD-TR840E/TR845E
STEREO MODEL:CCD-TR730E/TR840E/TR845E
J101
(Hi8 MODEL)
S VIDEO
12 S C I/O
14 XS JACK IN
10 S GND
11 S GND
15 S GND
S Y I/O
13
VIDEO
2 VIDEO I/O
16 V JACK IN
1 VIDEO GND
6 RFU DC GND
RFU DC OUT
5 RFU DC OUT
L (MONO)
AUDIO
4 AUDIO L I/O
17 AUDIO GND
3 AUDIO GND
R
8 AUDIO R I/O
9 XJACK MONO
7 AUDIO GND
(STEREO MODEL)
Q101 2SB798-T1-DLDK
L101 1uH
C101 47u 6.3V
R102 3.3 1/8W
R103 5600
R104 820
R105 18k
Q102 2SD1819A-QRS-TX
4.7
4
4.5
R101 0
C102 XX
L102 0
L103 0
L104 0
C103 XX B
C104 XX B
C105 XX B
C106 XX B
C107 XX B
C108 XX B
D101 MAZJ082DFL.SO
D102 MAZJ082DFL.SO
D103 MAZJ082DFL.SO
D105 MAZJ082DFL.SO
D106 MAZJ082DFL.SO
D104 MA8082-TX
(Hi8 MODEL)
R106 0
R107 0
C109 XX
C110 XX
(Hi8 MODEL)
R108 1k
R109 1k
C111 XX
A LND101
CN101 12P
12 S_Y_I/O
11 S_GND
10 S_C_I/O
9 XS_JACK_IN
8 VIDEO_I/O
7 VIDEO_GND
6 V_JACK_IN
5 A_4.75V
4 AUDIO_L_I/O
3 AUDIO_GND
2 AUDIO_R_I/O
1 XJACK_MONO
TO VC-195 BOARD(4/9) CN902
(SEE PAGE 4-29)
1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F
09

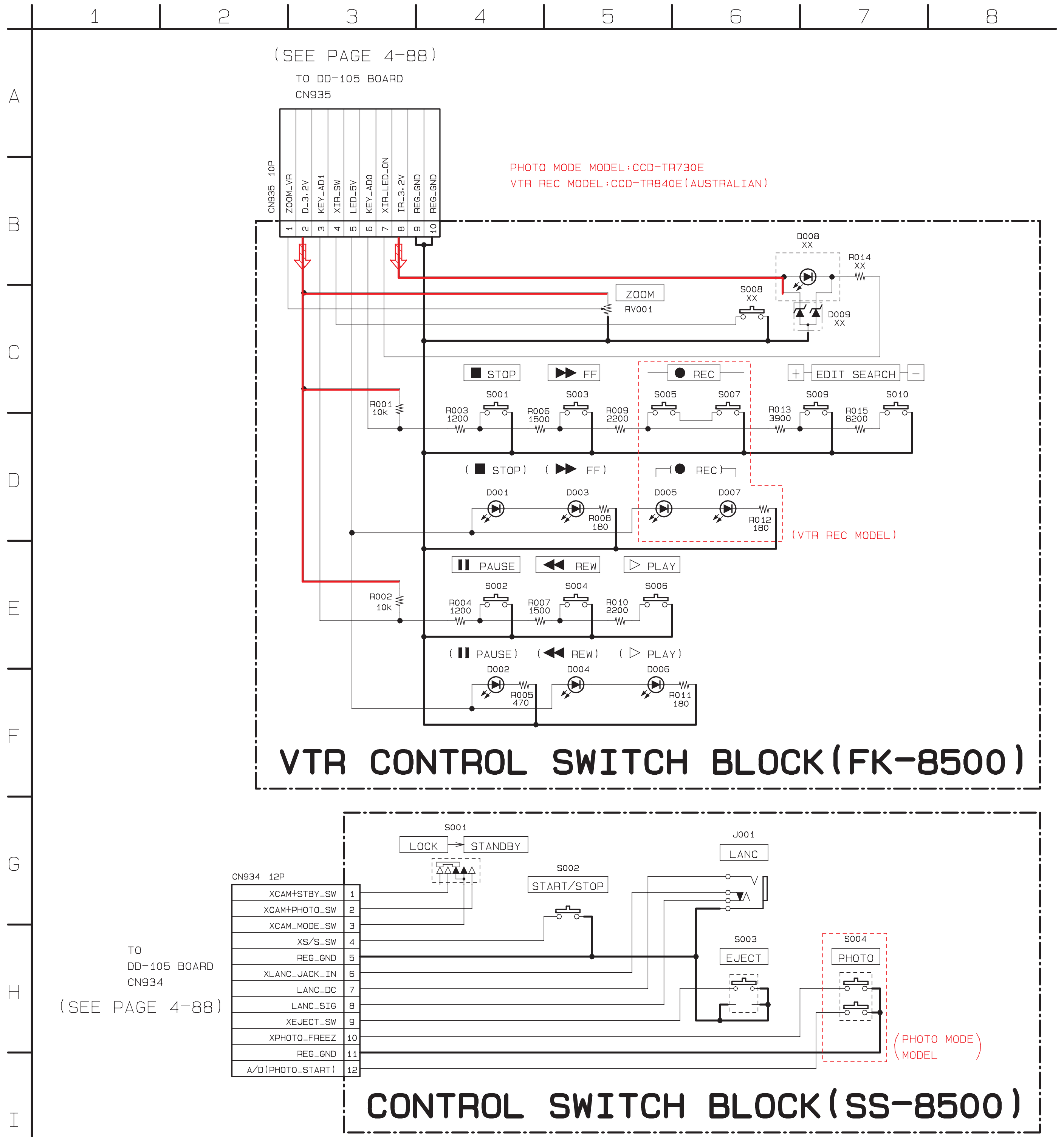

VF-119
(COLOR EVF)
CD-181
(CCD IMAGER)
CF-49
(CONTROL)
MA-311
(STEREO MIC)
DD-105
(POWER)
PJ-81
(AV IN/OUT)

- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip diode

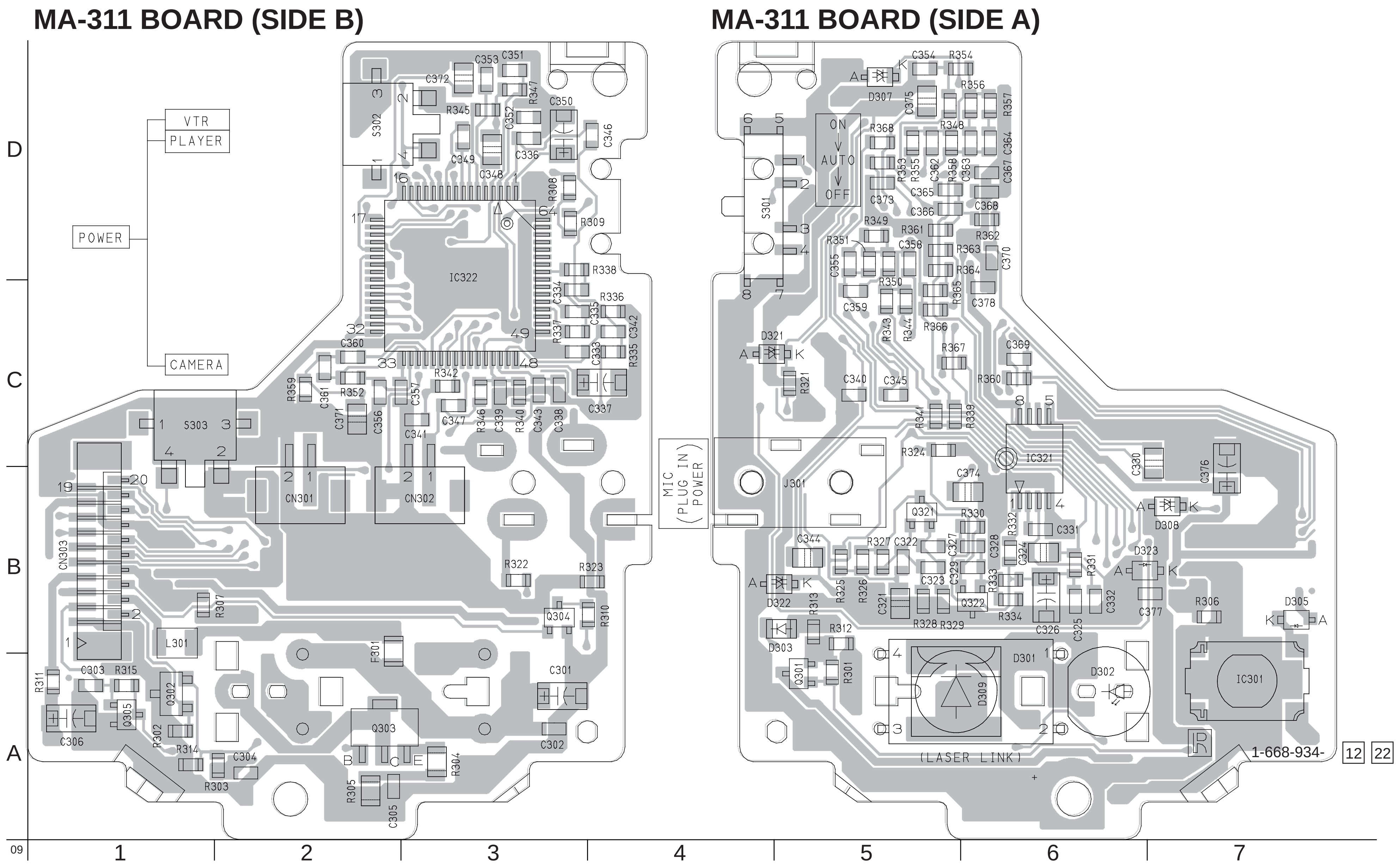



(SEE PAGE 4-88)
TO DD-105 BOARD
CN935
CN935 10P
ZOOM_VR
D_3.2V
KEY_AD1
XIR_SW
LED_5V
KEY_AD0
XIR_LED_ON
IR_3.2V
REG_GND
REG_GND
PHOTO MODE MODEL:CCD-TR730E
VTR REC MODEL:CCD-TR840E(AUSTRALIAN)
D008 XX
R014 XX
ZOOM
RV001
S008 XX
D009 XX
STOP
FF
REC
EDIT SEARCH
S001
S003
S005
S007
S009
S010
R001 10k
R003 1200
R006 1500
R009 2200
R013 3900
R015 8200
(STOP)
(FF)
(REC)
D001
D003
D005
D007
R008 180
R012 180
(VTR REC MODEL)
PAUSE
REW
PLAY
S002
S004
S006
R002 10k
R004 1200
R007 1500
R010 2200
(PAUSE)
(REW)
(PLAY)
D002
D004
D006
R005 470
R011 180
VTR CONTROL SWITCH BLOCK(FK-8500)
S001
LOCK
STANDBY
J001
LANC
S002
START/STOP
CN934 12P
XCAM+STBY_SW
XCAM+PHOTO_SW
XCAM_MODE_SW
XS/S_SW
REG_GND
XLANC_JACK_IN
LANC_DC
LANC_SIG
XEJECT_SW
XPHOTO_FREEZ
REG_GND
A/D(PHOTO_START)
TO DD-105 BOARD CN934
(SEE PAGE 4-88)
S003
EJECT
S004
PHOTO
(PHOTO MODE MODEL)
CONTROL SWITCH BLOCK(SS-8500)

- CONTROL SWITCH BLOCK(FK-8500,SS-8500) are replaced as a block,so that this PRINTED WIRING BOARD is omitted.

MA-311 (STEREO MIC) PRINTED WIRING BOARDS

– Ref No. MA-311 BOARD: 3,000 series –


MA-311 BOARD (SIDE B)
MA-311 BOARD (SIDE A)
VTR
PLAYER
POWER
CAMERA
MIC (PLUG IN) POWER
ON
AUTO
OFF
IC322
IC321
IC301
S302
S303
S301
CN301
CN302
CN303
J301
L301
Q303
Q304
D301
D302
(LASER LINK)
1-668-934-
12
22
09

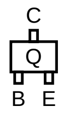
MA-311 BOARD

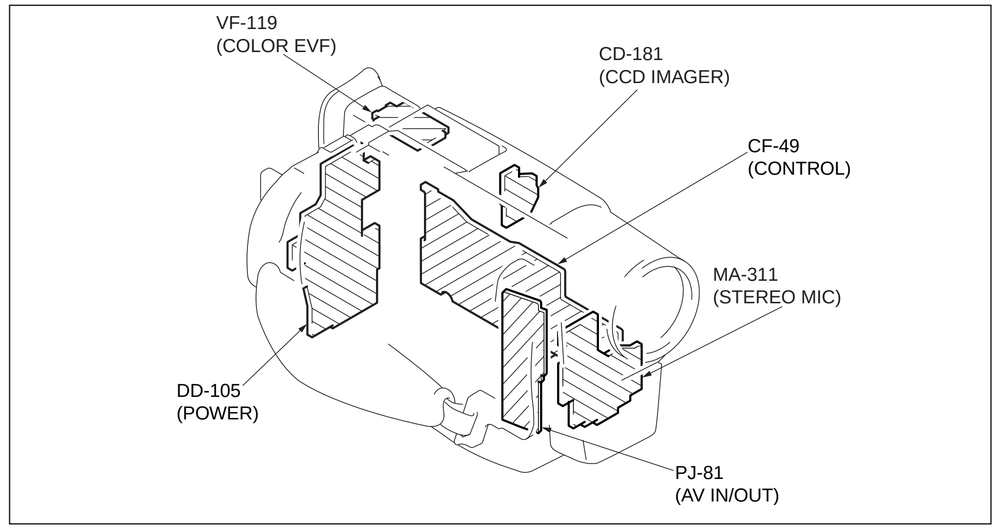
C301	A-3	C344	B-5	C373	D-5	Q301	A-5	R327	B-5	R356	D-6
C302	A-3	C345	C-5	C374	B-6	Q302	A-1	R328	B-5	R357	D-6
C303	A-1	C346	D-4	C375	D-5	Q303	A-2	R329	B-5	R358	D-5
C304	A-2	C347	C-3	C376	B-7	Q304	B-3	R330	B-6	R359	C-2
C305	A-2	C348	D-3	C377	B-6	Q305	A-1	R331	B-6	R360	C-6
C306	A-1	C349	D-3	C378	C-6	Q321	B-5	R332	B-6	R361	D-5
C321	B-5	C350	D-3			Q322	B-6	R333	B-6	R362	D-6
C322	B-5	C351	D-3	CN301	B-2			R334	B-6	R363	D-5
C323	B-5	C352	D-3	CN302	B-3	R301	A-5	R335	C-4	R364	D-5
C324	B-6	C353	D-3	CN303	B-1	R302	A-1	R336	C-4	R365	C-5
C325	B-6	C354	D-5			R303	A-2	R337	C-3	R366	C-5
C326	B-6	C355	D-5	D301	A-6	R304	A-3	R338	D-3	R367	C-5
C327	B-5	C356	C-2	D302	A-6	R305	A-2	R339	C-5	R368	D-5
C328	B-6	C357	C-2	D303	B-5	R306	B-7	R340	C-3		
C329	B-6	C358	D-5	D305	B-7	R307	B-1	R341	C-5	S301	D-4
C330	C-7	C359	C-5	D307	D-5	R308	D-3	R342	C-3	S302	D-2
C331	B-6	C360	C-2	D308	B-7	R309	D-3	R343	C-5	S303	C-1
C332	B-6	C361	C-2	D309	A-5	R310	B-3	R344	C-5		
C333	C-3	C362	D-5	D322	B-5	R311	A-1	R345	D-3		
C334	C-3	C363	D-6	D323	B-6	R312	B-5	R346	C-3		
C335	C-3	C364	D-6			R313	B-5	R347	D-3		
C336	D-3	C365	D-5	IC301	A-7	R314	A-1	R348	D-5		
C337	C-4	C366	D-5	IC321	C-6	R315	A-1	R349	D-5		
C338	C-3	C367	D-6	IC322	D-3	R321	C-5	R350	D-5		
C339	C-3	C368	D-6			R322	B-3	R351	D-5		
C340	C-5	C369	C-6	J310	B-5	R323	A-4	R352	C-2		
C341	C-3	C370	D-6			R324	C-5	R353	D-5		
C342	C-4	C371	C-2	L301	B-1	R325	B-5	R354	D-5		
C343	C-3	C372	D-3			R326	B-5	R355	D-5		

- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



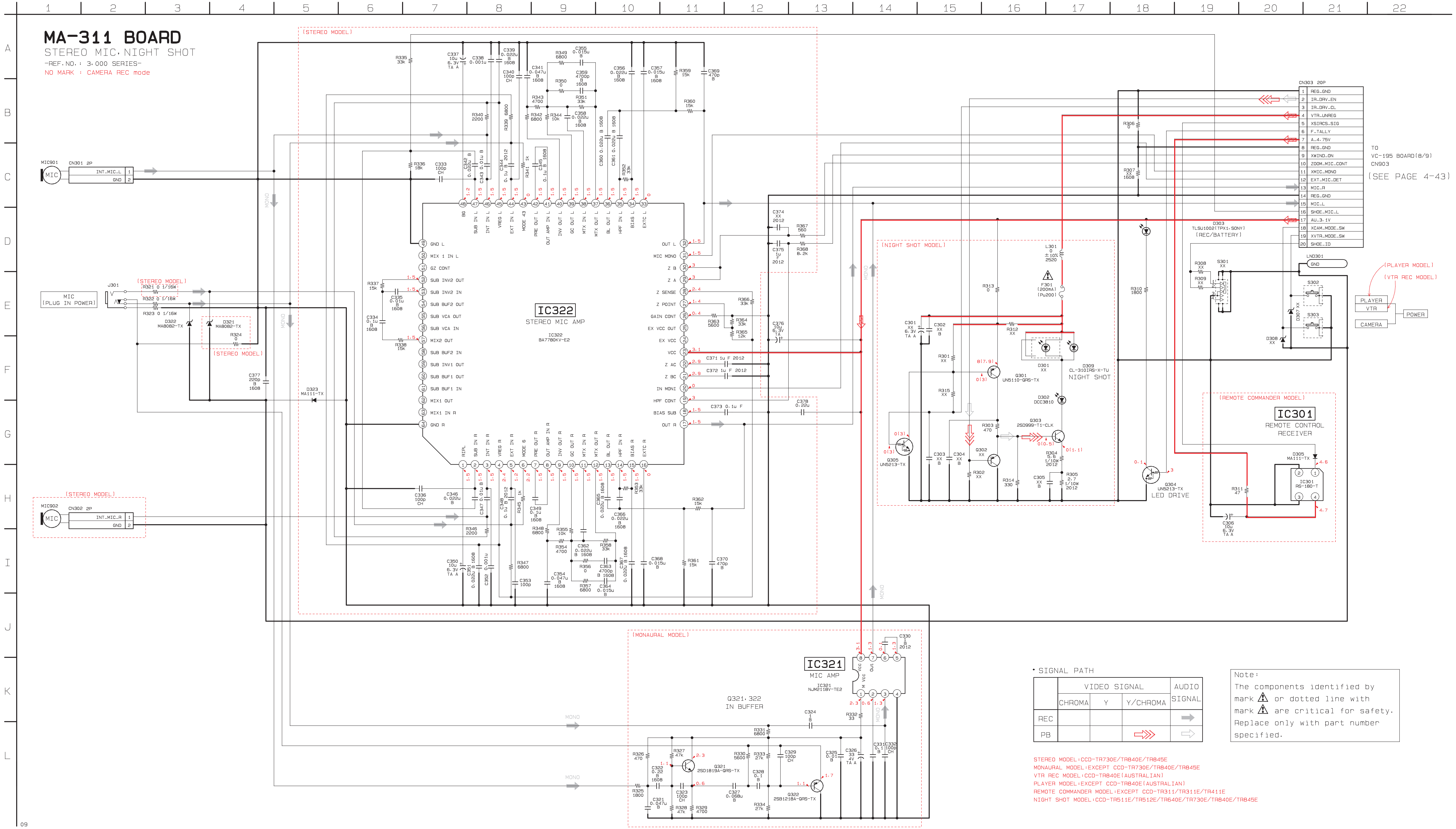

VF-119
(COLOR EVF)
CD-181
(CCD IMAGER)
CF-49
(CONTROL)
MA-311
(STEREO MIC)
DD-105
(POWER)
PJ-81
(AV IN/OUT)

MA-311 BOARD

STEREO MIC, NIGHT SHOT

-REF. NO. : 3,000 SERIES-

NO MARK : CAMERA REC mode

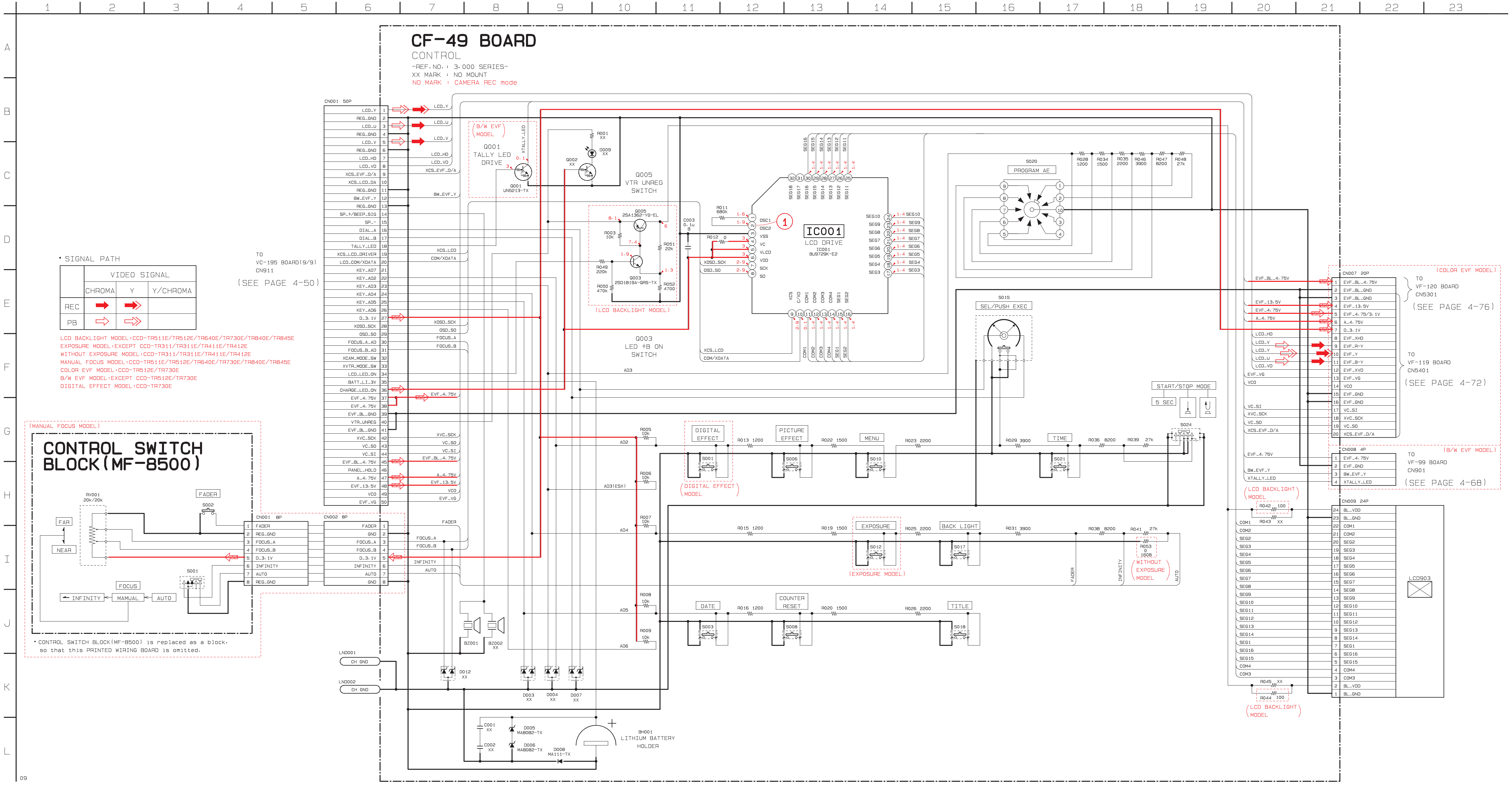

IC322
STEREO MIC AMP
IC322 BA7780KV-E2
IC321
MIC AMP
IC321 NJM2118V-TE2
Q321, 322
IN BUFFER
IC301
REMOTE CONTROL RECEIVER
IC301 RS-180-T
MIC901
CN301 2P
INT_MIC_L
GND
MIC902
CN302 2P
INT_MIC_R
J301
MIC
(PLUG IN POWER)
(STEREO MODEL)
(MONAURAL MODEL)
(NIGHT SHOT MODEL)
(REMOTE COMMANDER MODEL)
(PLAYER MODEL)
(VTR REC MODEL)
CN303 20P
1 REG_GND
2 IR_DRV_EN
3 IR_DRV_CL
4 VTR_UNREG
5 XSIRCS_SIG
6 F_TALLY
7 A_4.75V
8 REG_GND
9 XWIND_ON
10 ZOOM_MIC_CONT
11 XMIC_MONO
12 EXT_MIC_DET
13 MIC_R
14 REG_GND
15 MIC_L
16 SHOE_MIC_L
17 AU_3.1V
18 XCAM_MODE_SW
19 XVTR_MODE_SW
20 SHOE_ID
TO
VC-195 BOARD(8/9)
CN903
(SEE PAGE 4-43)
LND301
GND
D303
TLSU1002(TPX1-SONY)
(REC/BATTERY)
D309
CL-310IRS-X-TU
NIGHT SHOT
Q301
UN5110-QRS-TX
D302
DCC3B10
Q303
2SD999-T1-CLK
Q305
UN5213-TX
Q304
UN5213-TX
LED DRIVE
D305
MA111-TX
F301
(200mA)
(Pu200)
L301
PLAYER
VTR
CAMERA
POWER
S301
S302
S303
D321
MA8082-TX
D322
MA8082-TX
D323
MA111-TX
Q321
2SD1819A-QRS-TX
Q322
2SB1218A-QRS-TX
MONO

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB			⇨≫	⇨

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

STEREO MODEL:CCD-TR730E/TR840E/TR845E
MONAURAL MODEL:EXCEPT CCD-TR730E/TR840E/TR845E
VTR REC MODEL:CCD-TR840E(AUSTRALIAN)
PLAYER MODEL:EXCEPT CCD-TR840E(AUSTRALIAN)
REMOTE COMMANDER MODEL:EXCEPT CCD-TR311/TR311E/TR411E
NIGHT SHOT MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E


CF-49 BOARD
CONTROL
-REF. NO. : 3,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
CN001 50P
LCD_Y
REG_GND
LCD_U
LCD_V
LCD_HD
LCD_VD
XCS_EVF_D/A
BW_EVF_Y
SP_+/BEEP_SIG
SP_-
DIAL_A
DIAL_B
TALLY_LED
XCS_LCD_DRIVER
LCD_COM/XDATA
KEY_AD7
KEY_AD2
KEY_AD3
KEY_AD4
KEY_AD5
KEY_AD6
D_3.1V
XOSD_SCK
OSD_SO
FOCUS_A_AD
FOCUS_B_AD
XCAM_MODE_SW
XVTR_MODE_SW
LCD_LED_ON
BATT_LI_3V
CHARGE_LED_ON
EVF_4.75V
EVF_BL_GND
VTR_UNREG
XVC_SCK
VC_SO
VC_SI
EVF_BL_4.75V
PANEL_HOLD
A_4.75V
EVF_13.5V
VCO
EVF_VG
TO
VC-195 BOARD(9/9)
CN911
(SEE PAGE 4-50)
(B/W EVF MODEL)
Q001
TALLY LED
DRIVE
Q001
UN5213-TX
Q002
XX
R001
XX
D009
XX
Q005
VTR UNREG
SWITCH
Q005
2SA1362-YG-EL
R003
10k
R049
220k
R050
470k
Q003
2SD1819A-QRS-TX
R051
22k
R052
4700
(LCD BACKLIGHT MODEL)
C003
0.1u
B
Q003
LED +B ON
SWITCH
R011
680k
R012 0
OSC1
OSC2
VSS
VC
VLCD
VDD
SCK
SO
XOSD_SCK
OSD_SO
IC001
LCD DRIVE
IC001
BU9729K-E2
XCS_LCD
COM/XDATA
SEG10
SEG9
SEG8
SEG7
SEG6
SEG5
SEG4
SEG3
S020
PROGRAM AE
R028 1200
R034 1500
R035 2200
R046 3900
R047 8200
R048 27k
S015
SEL/PUSH EXEC
START/STOP MODE
5 SEC
S024
DIGITAL EFFECT
PICTURE EFFECT
MENU
TIME
S001
S006
S010
S021
(DIGITAL EFFECT MODEL)
R005 10k
R006 10k
R007 10k
R008 10k
R009 10k
R013 1200
R022 1500
R023 2200
R029 3900
R036 8200
R039 27k
EXPOSURE
BACK LIGHT
S012
S017
(EXPOSURE MODEL)
R015 1200
R019 1500
R025 2200
R031 3900
R038 8200
R041 27k
R053 1608
(WITHOUT EXPOSURE MODEL)
DATE
COUNTER RESET
TITLE
S003
S008
S018
R016 1200
R020 1500
R026 2200
AD2
AD3(ESK)
AD4
AD5
AD6
FADER
INFINITY
AUTO
BZ001
BZ002
XX
D012
XX
D003
XX
D004
XX
D007
XX
LND001
CH GND
LND002
CH GND
C001
XX
C002
XX
D005
MA8082-TX
D006
MA8082-TX
D008
MA111-TX
BH001
LITHIUM BATTERY
HOLDER
CN007 20P
(COLOR EVF MODEL)
EVF_BL_4.75V
EVF_BL_GND
EVF_13.5V
EVF_4.75V/3.1V
A_4.75V
D_3.1V
EVF_XHD
EVF_R-Y
EVF_Y
EVF_B-Y
EVF_XVD
EVF_VG
VCO
EVF_GND
VC_SI
XVC_SCK
VC_SO
XCS_EVF_D/A
TO
VF-120 BOARD
CN5301
(SEE PAGE 4-76)
TO
VF-119 BOARD
CN5401
(SEE PAGE 4-72)
CN008 4P
(B/W EVF MODEL)
BW_EVF_Y
XTALLY_LED
TO
VF-99 BOARD
CN901
(SEE PAGE 4-68)
CN009 24P
BL_VDD
BL_GND
COM1
COM2
COM3
COM4
SEG1
SEG2
SEG3
SEG4
SEG5
SEG6
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
SEG16
LCD903
R042 100
R043 XX
R044 100
R045 XX
(LCD BACKLIGHT MODEL)
(MANUAL FOCUS MODEL)
CONTROL SWITCH
BLOCK(MF-8500)
RV001
20k/20k
FAR
NEAR
FADER
S002
S001
FOCUS
INFINITY
MAMUAL
AUTO
CN001 8P
CN002 8P
FADER
REG_GND
FOCUS_A
FOCUS_B
D_3.1V
INFINITY
AUTO
GND
09

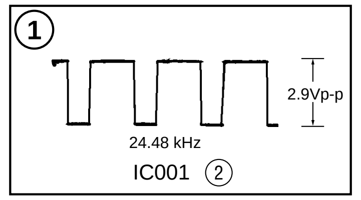
• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡⟫	
PB	⇨	⇨⟫	

LCD BACKLIGHT MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
EXPOSURE MODEL:EXCEPT CCD-TR311/TR311E/TR411E/TR412E
WITHOUT EXPOSURE MODEL:CCD-TR311/TR311E/TR411E/TR412E
MANUAL FOCUS MODEL:CCD-TR511E/TR512E/TR640E/TR730E/TR840E/TR845E
COLOR EVF MODEL:CCD-TR512E/TR730E
B/W EVF MODEL:EXCEPT CCD-TR512E/TR730E
DIGITAL EFFECT MODEL:CCD-TR730E

• CONTROL SWITCH BLOCK(MF-8500) is replaced as a block,
so that this PRINTED WIRING BOARD is omitted.

CF-49 BOARD
CAMERA REC

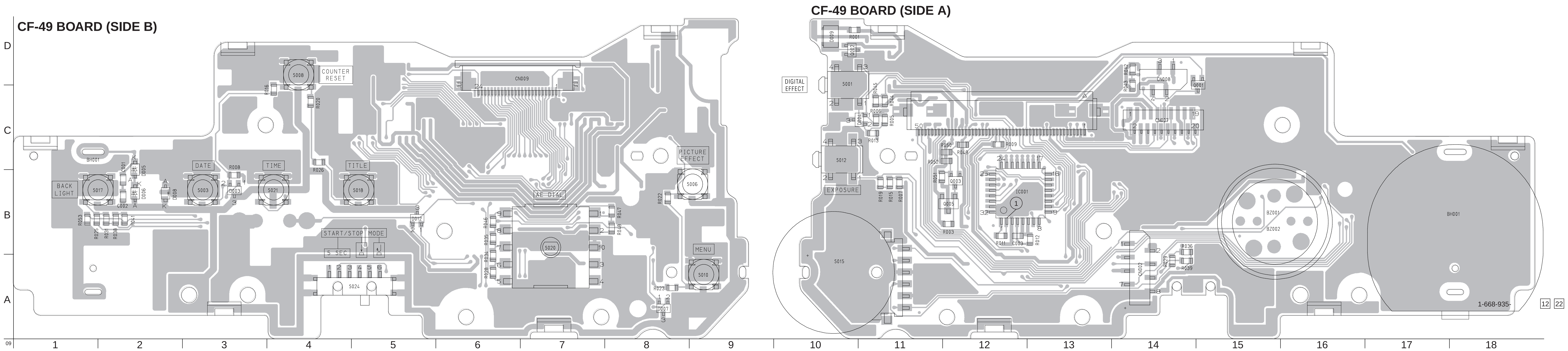


CF-49 (CONTROL) PRINTED WIRING BOARD

– Ref No. CF-49 BOARD: 3,000 series –

CF-49 BOARD

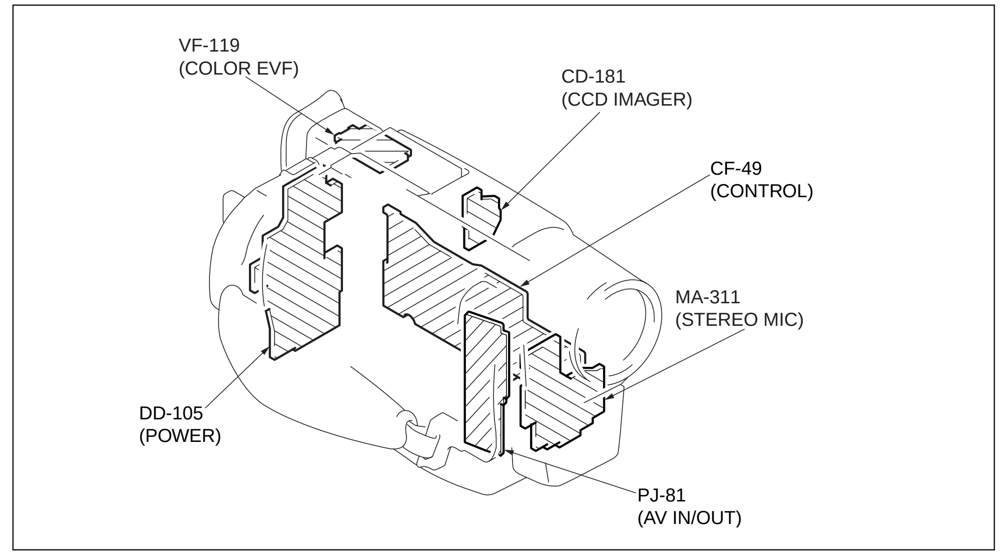
BH001	B-18
BZ001	B-15
BZ002	B-15
C001	B-2
C002	B-2
C003	B-12
CN002	A-14
CN007	C-14
CN008	D-14
CN009	D-6
D003	B-3
D004	C-11
D005	B-2
D006	B-2
D007	A-8
D008	B-2
D009	D-10
D012	B-5
IC001	B-12
Q001	C-15
Q002	D-10
Q003	B-12
Q005	B-12
R001	D-10
R003	B-12
R005	C-11
R006	C-11
R007	B-11
R008	B-3
R009	C-11
R011	B-12
R012	B-13
R013	C-11
R015	B-11
R016	C-4
R019	B-11
R020	C-4
R022	B-8
R023	A-8
R025	B-1
R026	C-4
R028	A-6
R029	A-14
R031	B-2
R034	A-6
R035	B-6
R038	B-2
R039	A-14
R041	B-2
R042	D-14
R043	C-14
R044	C-11
R045	C-11
R046	B-6
R047	B-8
R048	B-8
R049	C-11
R050	C-11
R051	B-12
R052	C-11
R053	B-1
S001	C-10
S003	B-3
S006	B-9
S008	D-4
S010	A-9
S012	C-10
S015	A-10
S017	B-1
S018	B-5
S020	B-7
S021	B-4
S024	A-5



CF-49 BOARD (SIDE B)

CF-49 BOARD (SIDE A)

D
C
B
A
09
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
BACK LIGHT
DATE
TIME
TITLE
COUNTER RESET
PICTURE EFFECT
AE DIAL
START/STOP MODE
5 SEC
MENU
CN009
S008
S017
S003
S021
S018
S006
S020
S024
S010
BH001
DIGITAL EFFECT
EXPOSURE
S001
S012
S015
IC001
CN007
BZ001
BZ002
BH001
1-668-935-
12
22

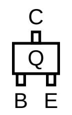


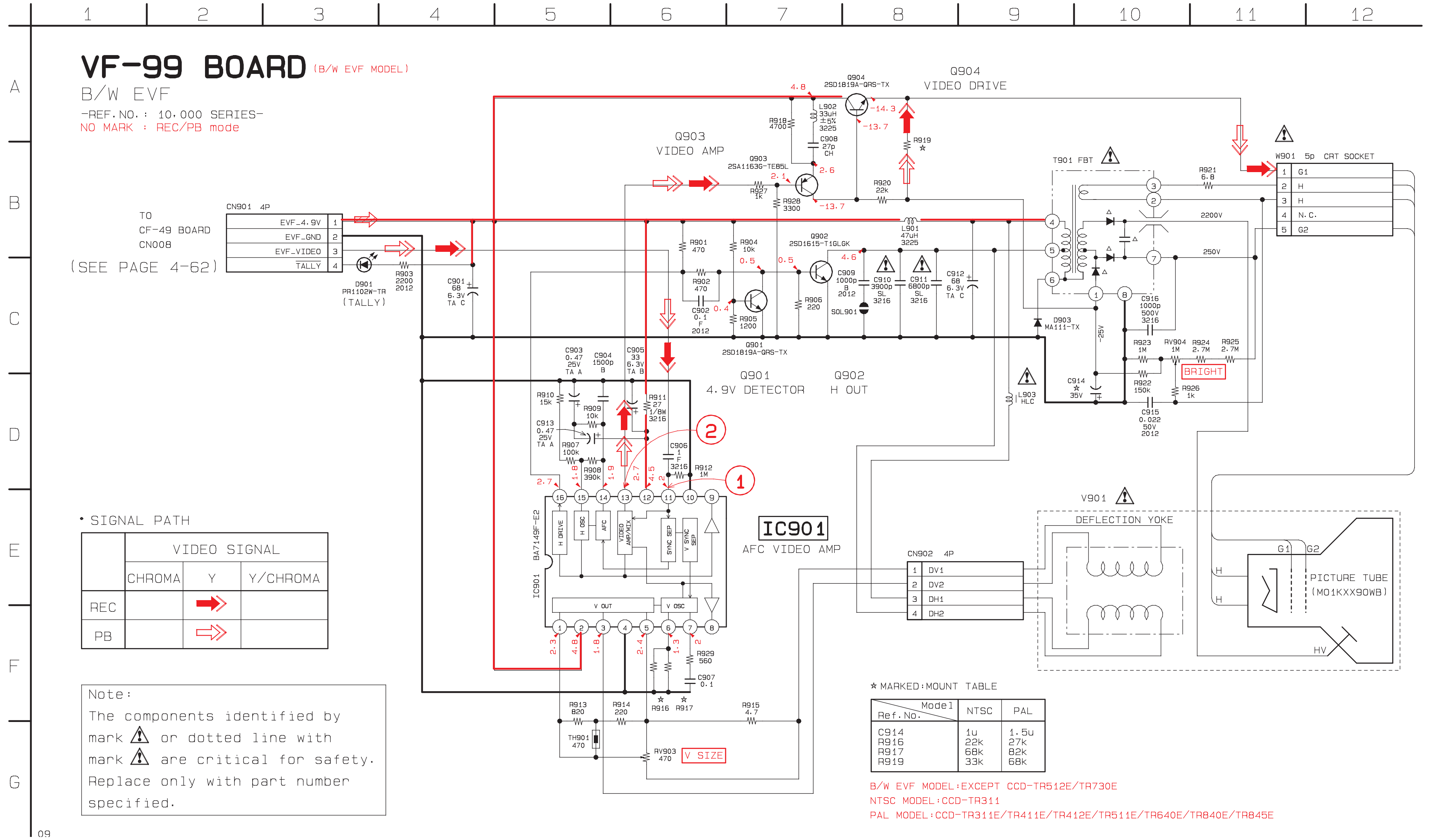
VF-119
(COLOR EVF)
CD-181
(CCD IMAGER)
CF-49
(CONTROL)
MA-311
(STEREO MIC)
DD-105
(POWER)
PJ-81
(AV IN/OUT)

- **For Printed Wiring Boards.**

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor




VF-99 BOARD (B/W EVF MODEL)
B/W EVF
-REF.NO.: 10,000 SERIES-
NO MARK : REC/PB mode
TO
CF-49 BOARD
CN008
(SEE PAGE 4-62)
CN901 4P
EVF_4.9V
EVF_GND
EVF_VIDEO
TALLY
D901
PR1102W-TR
(TALLY)
R903
2200
2012
C901
68
6.3V
TA C
Q903
VIDEO AMP
Q904
VIDEO DRIVE
Q901
4.9V DETECTOR
Q902
H OUT
IC901
AFC VIDEO AMP
T901 FBT
W901 5P CRT SOCKET
G1
H
H
N.C.
G2
CN902 4P
DV1
DV2
DH1
DH2
V901
DEFLECTION YOKE
PICTURE TUBE
(M01KXX90WB)
HV
BRIGHT
V SIZE
1
2
A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9
10
11
12
09

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC		➡	
PB		⇨	

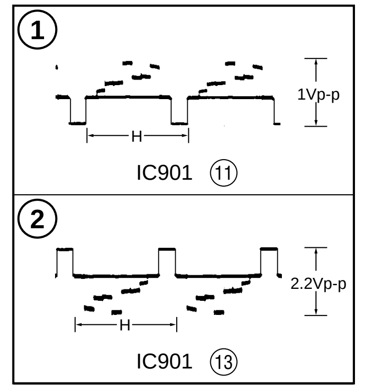
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

☆ MARKED:MOUNT TABLE

Model Ref.No.	NTSC	PAL
C914	1u	1.5u
R916	22k	27k
R917	68k	82k
R919	33k	68k

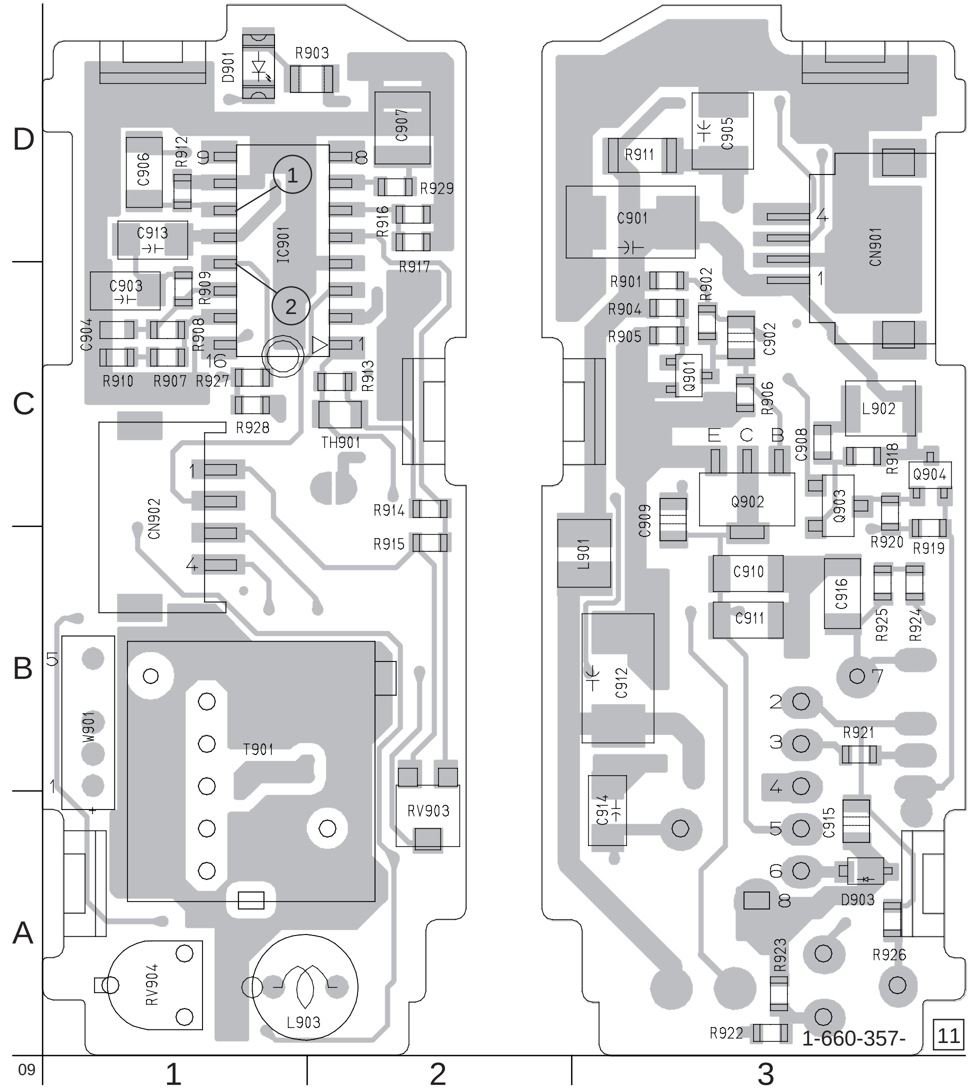
B/W EVF MODEL:EXCEPT CCD-TR512E/TR730E
NTSC MODEL:CCD-TR311
PAL MODEL:CCD-TR311E/TR411E/TR412E/TR511E/TR640E/TR840E/TR845E

VF-99 BOARD
CAMERA REC



VF-99 (B/W EVF (B/W EVF MODEL)) PRINTED WIRING BOARD
– Ref No. VF-99 BOARD: 10,000 series –

VF-99 BOARD (SIDE A) **VF-99 BOARD (SIDE B)**


D
C
B
A
1
2
3
09
1-660-357-
11
IC901
CN901
CN902
T901
TH901
RV903
RV904
L903
Q904
R919
R924
R903
R928

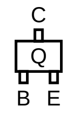
VF-99 BOARD

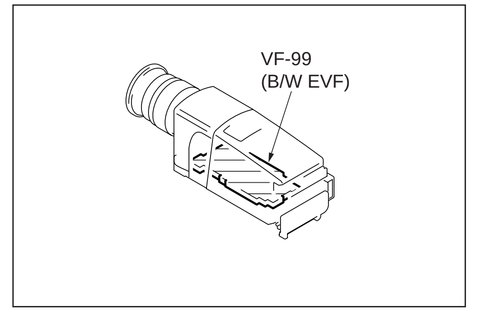
C901	D-3	R919	B-3
C902	C-3	R920	C-3
C903	C-1	R921	B-3
C904	C-1	R922	A-3
C905	D-3	R923	A-3
C906	D-1	R924	B-3
C907	D-2	R925	B-3
C908	C-3	R926	A-3
C909	C-3	R927	C-1
C910	B-3	R928	C-1
C911	B-3	R928	D-2
C912	B-3		
C913	D-1	RV903	A-2
C914	A-3	RV904	A-1
C915	A-3		
C916	B-3	T901	B-1
CN901	D-3	TH901	C-2
CN902	C-1		
		W901	B-1
D901	D-1		
D903	A-3		
IC901	D-1		
L901	B-3		
L902	C-3		
L903	A-1		
Q901	C-3		
Q902	C-3		
Q903	C-3		
Q904	C-3		
R901	C-3		
R902	C-3		
R903	D-2		
R904	C-3		
R905	C-3		
R906	C-3		
R907	C-1		
R908	C-1		
R909	C-1		
R910	C-1		
R911	D-3		
R912	D-1		
R913	C-2		
R914	C-2		
R915	B-2		
R916	D-2		
R917	D-2		
R918	C-3		

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

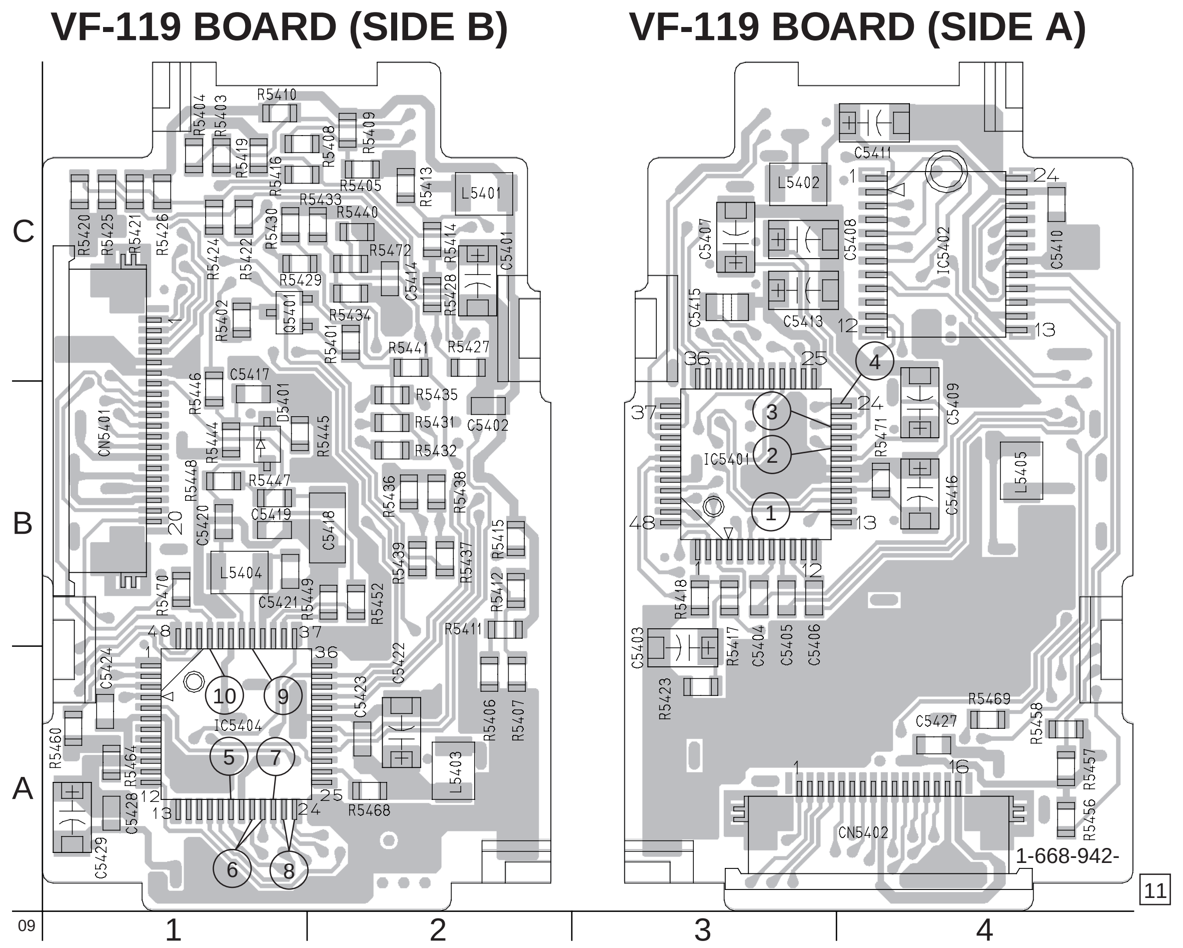
- Chip transistor





VF-119 (COLOR EVF (COLOR EVF MODEL)) PRINTED WIRING BOARD

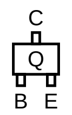
– Ref No. VF-119 BOARD: 10,000 series –

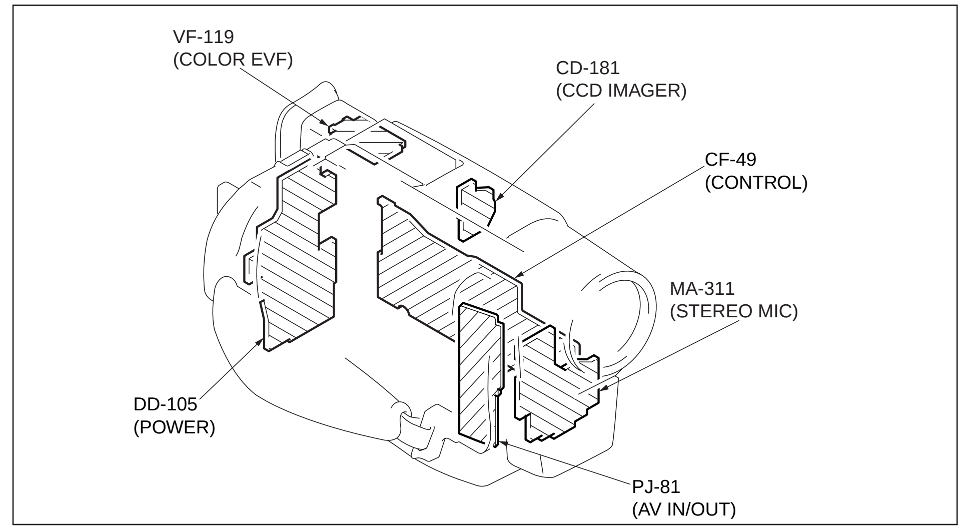

VF-119 BOARD (SIDE B)
VF-119 BOARD (SIDE A)
C
B
A
1
2
3
4
09
IC5404
IC5401
IC5402
CN5401
CN5402
1-668-942-
11

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



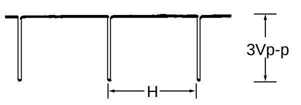

VF-119
(COLOR EVF)
CD-181
(CCD IMAGER)
CF-49
(CONTROL)
MA-311
(STEREO MIC)
DD-105
(POWER)
PJ-81
(AV IN/OUT)

VC-119 BOARD

C5401	C-2	R5410	C-1
C5402	B-2	R5411	B-2
C5403	A-3	R5412	B-2
C5404	B-3	R5414	C-2
C5405	B-3	R5414	C-2
C5406	B-3	R5415	B-2
C5407	C-3	R5416	C-1
C5408	C-3	R5417	B-3
C5409	B-4	R5418	B-3
C5410	C-4	R5418	C-2
C5411	C-4	R5419	C-1
C5413	C-3	R5420	C-1
C5415	C-3	R5421	C-1
C5416	B-4	R5422	C-1
C5417	B-1	R5423	A-3
C5418	B-2	R5424	C-1
C5419	B-1	R5425	C-1
C5420	B-1	R5426	C-1
C5421	B-1	R5427	C-2
C5422	A-2	R5428	C-2
C5423	A-2	R5429	C-1
C5424	A-1	R5430	C-1
C5427	A-4	R5431	B-2
C5428	A-1	R5432	B-2
C5429	A-1	R5433	C-2
		R5434	C-2
CN5401	B-1	R5435	B-2
CN5402	A-4	R5436	B-2
		R5437	B-2
D5401	B-1	R5438	B-2
		R5439	B-2
IC5401	B-3	R5440	C-2
IC5402	C-4	R5441	C-2
IC5404	A-1	R5444	B-1
		R5445	B-1
L5401	C-2	R5446	B-1
L5402	C-3	R5447	B-1
L5403	A-2	R5448	B-1
L5404	B-1	R5449	B-2
L5405	B-4	R5452	B-2
		R5456	A-4
Q5401	C-1	R5457	A-4
		R5458	A-4
R5401	C-2	R5460	A-1
R5402	C-1	R5464	A-1
R5403	C-1	R5468	A-2
R5404	C-1	R5469	A-4
R5405	C-2	R5470	B-1
R5406	A-2	R5471	B-4
R5407	A-2	R5472	C-2
R5408	C-1		
R5409	C-2		

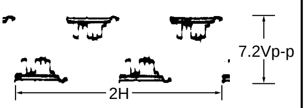
VF-119 BOARD
CAMERA REC

①



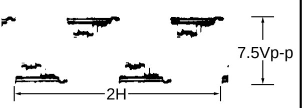
IC5401 ⑭

②



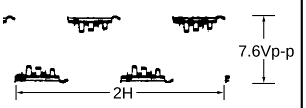
IC5401 ⑳

③



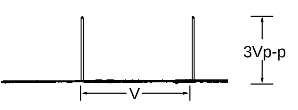
IC5401 ㉒

④



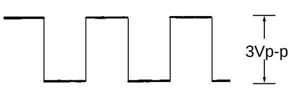
IC5401 ㉔

⑤



IC5404 ⑱

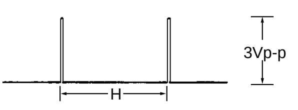
⑥



7.852 kHz

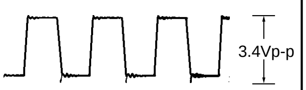
IC5404 ⑳, ㉑

⑦



IC5404 ㉒

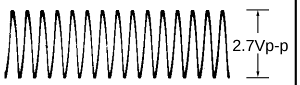
⑧



1.84 MHz

IC5404 ㉓, ㉔

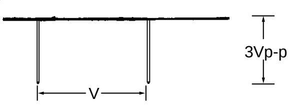
⑨



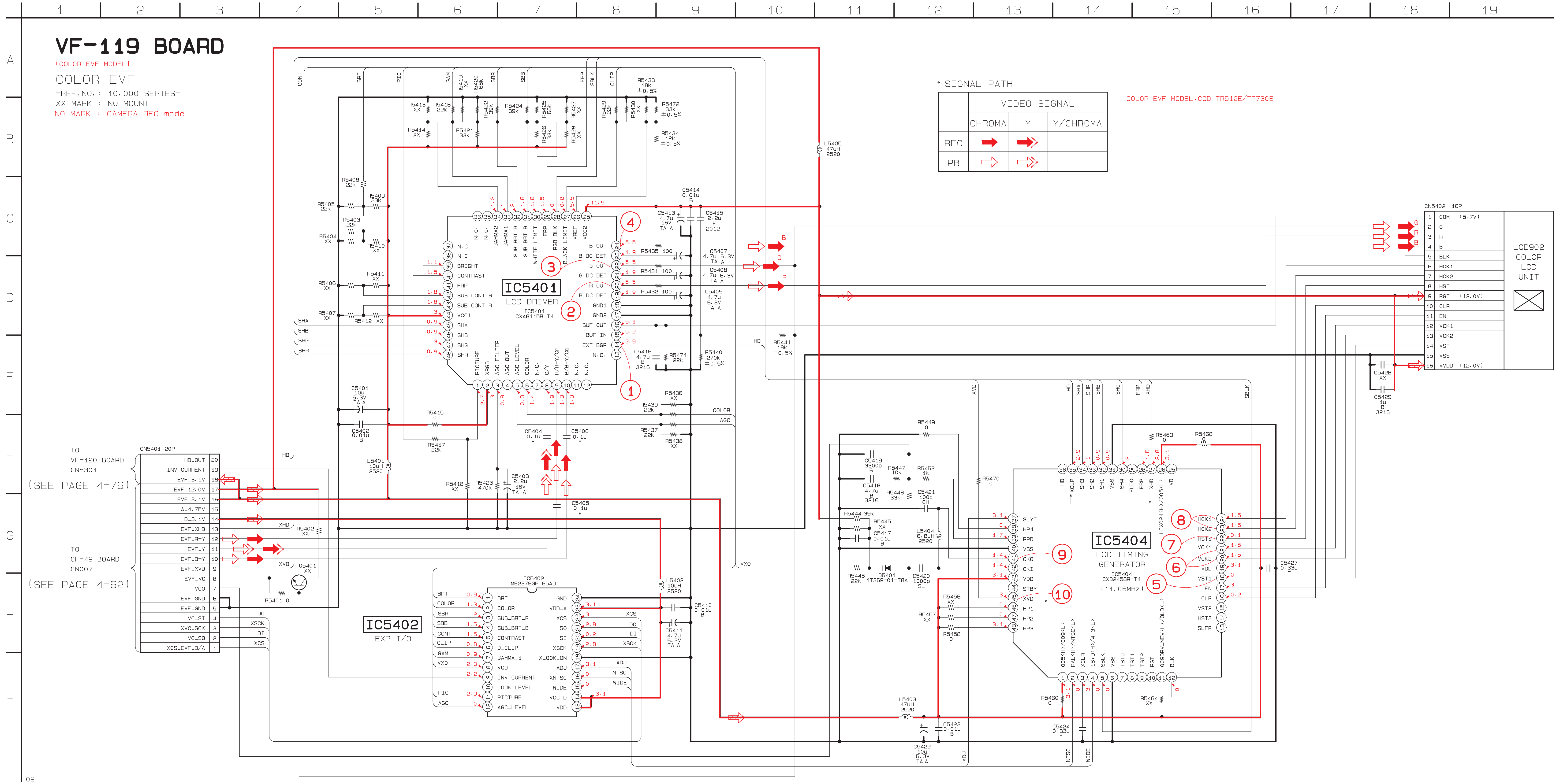
11.06 MHz

IC5404 ㊶

⑩

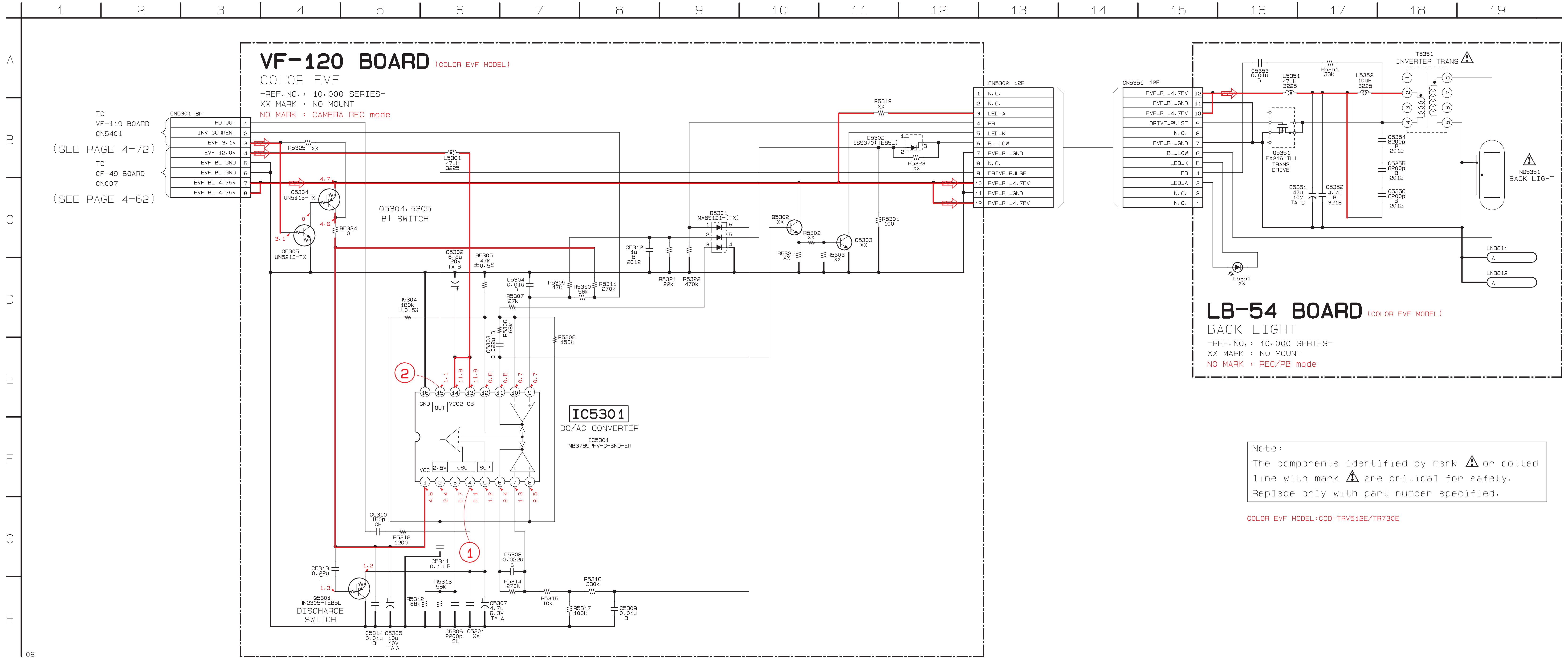


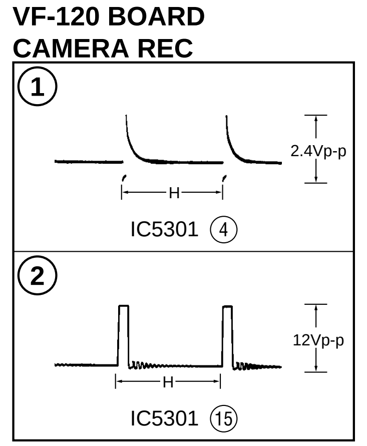
IC5404 ㊺


VF-119 BOARD
(COLOR EVF MODEL)
COLOR EVF
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
• SIGNAL PATH
COLOR EVF MODEL:CCD-TR512E/TR730E
IC5401
LCD DRIVER
IC5401
CXA8115R-T4
IC5402
EXP I/O
IC5402
M62376GP-65AD
IC5404
LCD TIMING
GENERATOR
IC5404
CXD2458R-T4
(11.06MHz)
CN5401 20P
TO
VF-120 BOARD
CN5301
(SEE PAGE 4-76)
TO
CF-49 BOARD
CN007
(SEE PAGE 4-62)
HD_OUT
INV_CURRENT
EVF_3.1V
EVF_12.0V
EVF_3.1V
A_4.75V
D_3.1V
EVF_XHD
EVF_R-Y
EVF_Y
EVF_B-Y
EVF_XVD
EVF_VG
VCO
EVF_GND
EVF_GND
VC_SI
XVC_SCK
VC_SO
XCS_EVF_D/A
CN5402 16P
COM (5.7V)
G
R
B
BLK
HCK1
HCK2
HST
RGT (12.0V)
CLR
EN
VCK1
VCK2
VST
VSS
VVDD (12.0V)
LCD902
COLOR
LCD
UNIT
Q5401
D5401
1T369-01-T8A
L5401
L5402
L5403
L5404
L5405
09

- SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡	➡»	
PB	⇨	⇨»	


VF-120 BOARD (COLOR EVF MODEL)
COLOR EVF
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
TO VF-119 BOARD CN5401 (SEE PAGE 4-72)
TO CF-49 BOARD CN007 (SEE PAGE 4-62)
CN5301 8P
1 HD_OUT
2 INV_CURRENT
3 EVF_3.1V
4 EVF_12.0V
5 EVF_BL_GND
6 EVF_BL_GND
7 EVF_BL_4.75V
8 EVF_BL_4.75V
R5325 XX
L5301 47uH 3225
Q5304 UN5113-TX
Q5305 UN5213-TX
R5324 0
Q5304, 5305 B+ SWITCH
C5302 6.8u 20V TA B
R5305 47k ±0.5%
C5312 1u B 2012
R5321 22k
R5322 470k
IC5301 DC/AC CONVERTER
IC5301 MB3789PFV-G-BND-ER
GND OUT VCC2 CB
VCC 2.5V OSC SCP
C5310 150p CH
R5318 1200
C5311 0.1u B
C5313 0.22u F
Q5301 RN2305-TE85L DISCHARGE SWITCH
C5314 0.01u B
C5305 10u 10V TA A
R5312 68k
R5313 56k
C5306 2200p SL
C5301 XX
C5307 4.7u 6.3V TA A
C5308 0.022u B
R5314 270k
R5315 10k
R5316 330k
R5317 100k
C5309 0.01u B
R5308 150k
C5303 0.022u B
D5301 MA8121-(TX)
D5302 1SS370(TE85L)
R5323 XX
R5319 XX
R5301 100
Q5302 XX
Q5303 XX
CN5302 12P
1 N.C.
2 N.C.
3 LED_A
4 FB
5 LED_K
6 BL_LOW
7 EVF_BL_GND
8 N.C.
9 DRIVE_PULSE
10 EVF_BL_4.75V
11 EVF_BL_GND
12 EVF_BL_4.75V
CN5351 12P
12 EVF_BL_4.75V
11 EVF_BL_GND
10 EVF_BL_4.75V
9 DRIVE_PULSE
8 N.C.
7 EVF_BL_GND
6 BL_LOW
5 LED_K
4 FB
3 LED_A
2 N.C.
1 N.C.
C5353 0.01u B
L5351 47uH 3225
R5351 33k
L5352 10uH 3225
T5351 INVERTER TRANS ⚠
Q5351 FX216-TL1 TRANS DRIVE
C5351 47u 10V TA C
C5352 4.7u B 3216
C5354 8200p B 2012
C5355 8200p B 2012
C5356 8200p B 2012
⚠ ND5351 BACK LIGHT
LND811
LND812
D5351 XX
LB-54 BOARD (COLOR EVF MODEL)
BACK LIGHT
-REF.NO.: 10,000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB mode
①
②


VF-120 BOARD
CAMERA REC

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

COLOR EVF MODEL:CCD-TRV512E/TR730E

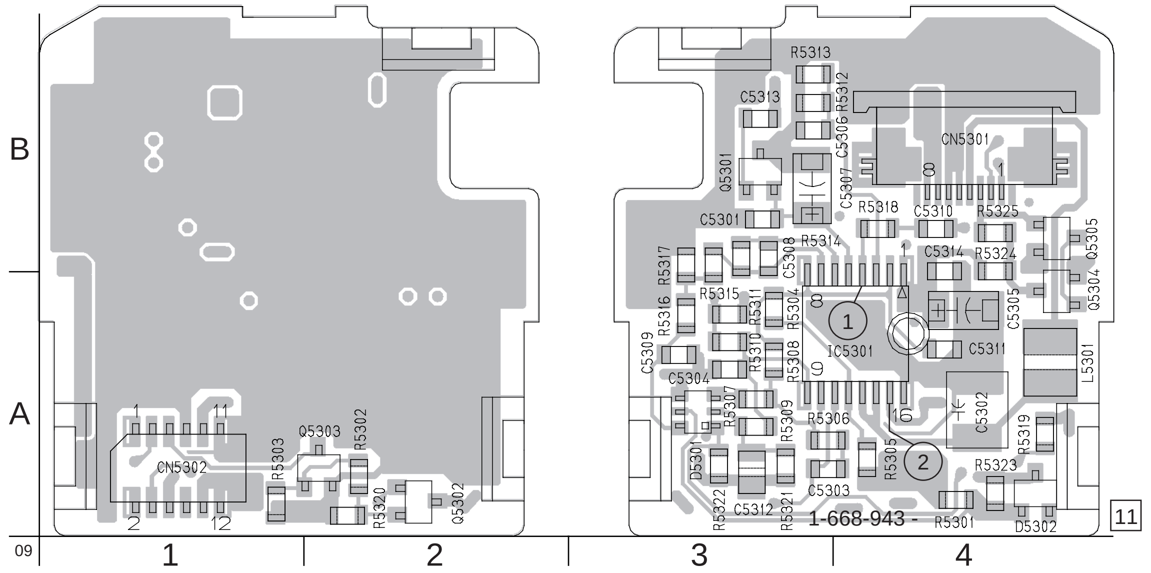
VF-120 (COLOR EVF), LB-54 (BACK LIGHT) (COLOR EVF MODEL) PRINTED WIRING BOARDS

– Ref No. VF-120 BOARD: 10,000 series, LB-54 BOARD: 10,000 series –

VF-120 BOARD

C5301	B-3
C5302	A-4
C5303	A-4
C5304	A-3
C5305	A-4
C5306	B-4
C5307	B-4
C5308	B-3
C5309	A-3
C5310	B-4
C5311	A-4
C5312	A-3
C5313	B-3
CN5301	B-4
CN5302	A-1
D5301	A-3
D5302	A-4
IC5301	A-4
L5301	A-4
Q5301	B-3
Q5302	A-2
Q5303	A-2
Q5304	A-4
Q5305	B-4
R5302	A-2
R5302	A-4
R5303	A-1
R5303	A-3
R5304	A-3
R5305	A-4
R5306	A-4
R5307	A-3
R5309	A-3
R5310	A-3
R5311	A-3
R5312	B-4
R5313	B-4
R5314	B-3
R5315	B-3
R5316	A-3
R5317	B-3
R5318	B-4
R5319	A-4
R5320	A-2
R5321	A-3
R5322	A-3
R5323	A-4
R5324	A-4
R5325	B-4

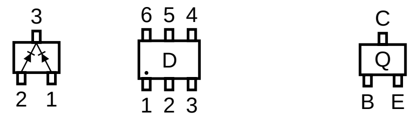
VF-120 BOARD (SIDE B)　VF-120 BOARD (SIDE A)


B
A
CN5302
R5303
Q5303
R5302
R5320
Q5302
2
12
R5313
C5313
R5312
C5306
CN5301
Q5301
C5307
R5318
C5310
R5325
C5301
R5314
C5314
R5324
Q5304
Q5305
R5317
C5308
R5316
R5315
C5305
C5309
IC5301
C5311
L5301
C5304
R5306
C5302
R5319
D5301
R5305
R5323
R5322
C5312
C5303
R5321
R5301
D5302
1-668-943-
11
09
1
2
3
4

- **For Printed Wiring Boards.**
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

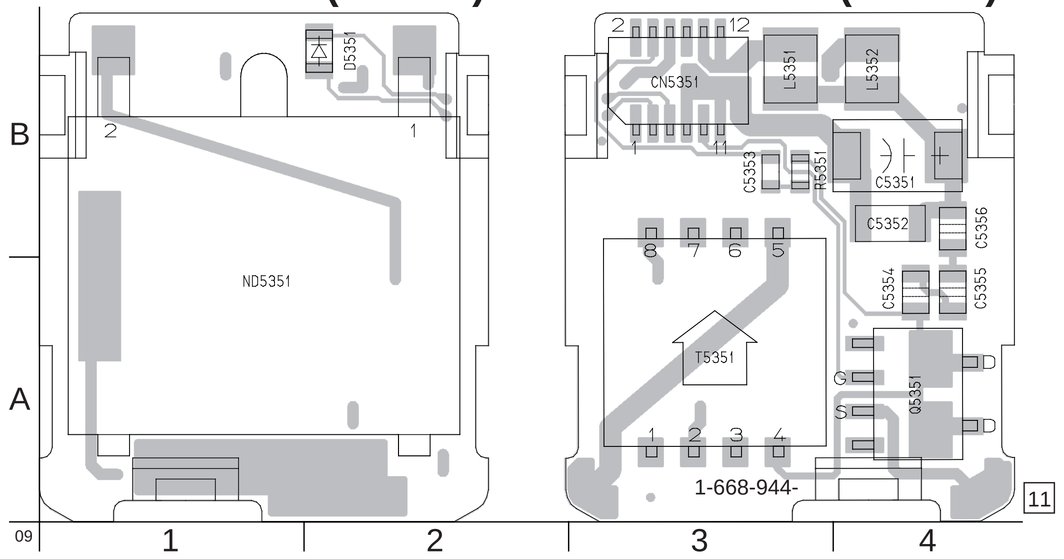
- Chip diode
- Chip transistor

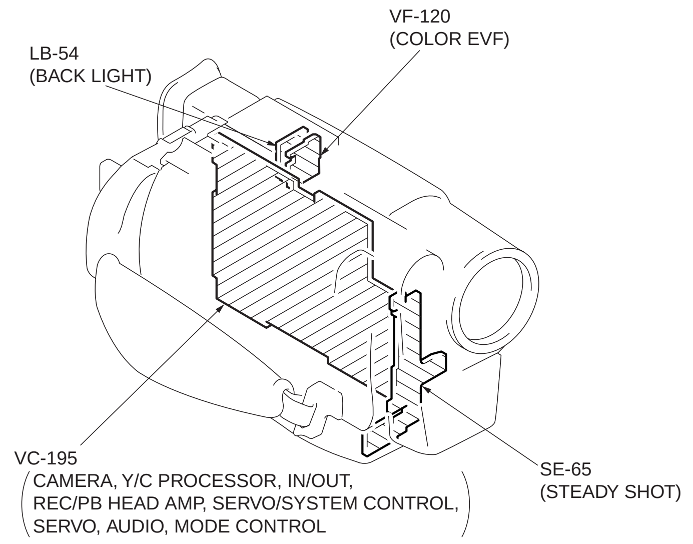

3
2 1
6 5 4
D
1 2 3
C
Q
B E

LB-54 BOARD

C5351	B-4
C5352	B-4
C5353	B-3
C5354	A-4
C5355	A-4
C5356	B-4
CN5351	B-3
D5351	B-2
L5351	B-3
L5352	B-4
ND5351	A-1
Q5351	A-4
R5351	B-3
T5351	A-3

LB-54 BOARD (SIDE B)　LB-54 BOARD (SIDE A)


B
A
D5351
2
1
ND5351
CN5351
L5351
L5352
C5353
R5351
C5351
C5352
C5356
C5354
C5355
T5351
Q5351
1-668-944-
11
09
1
2
3
4

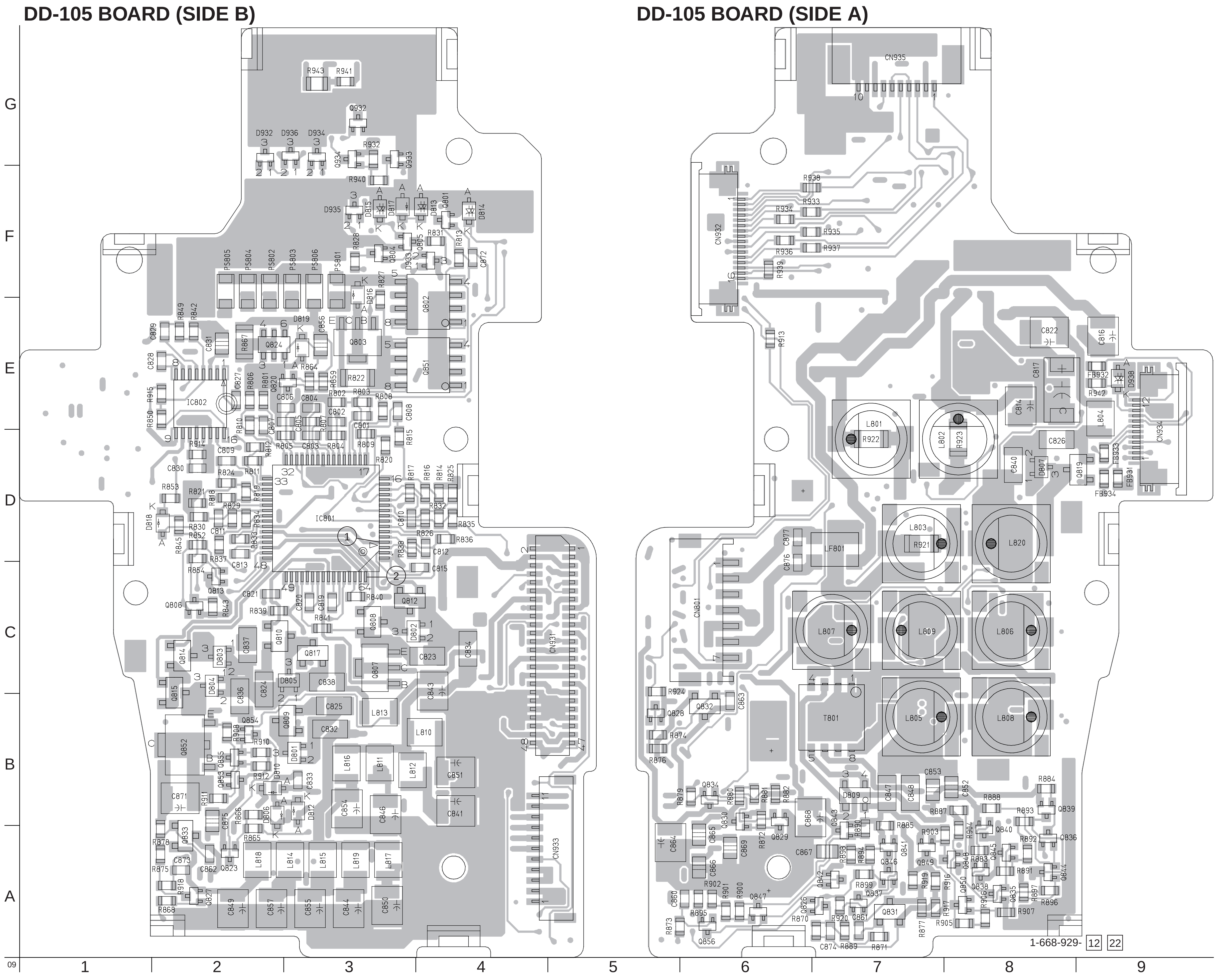

VF-120
(COLOR EVF)
LB-54
(BACK LIGHT)
VC-195
CAMERA, Y/C PROCESSOR, IN/OUT,
REC/PB HEAD AMP, SERVO/SYSTEM CONTROL,
SERVO, AUDIO, MODE CONTROL
SE-65
(STEADY SHOT)

DD-105 (POWER) PRINTED WIRING BOARD

– Ref No. DD-105 BOARD: 2,000 series –

DD-105 BOARD

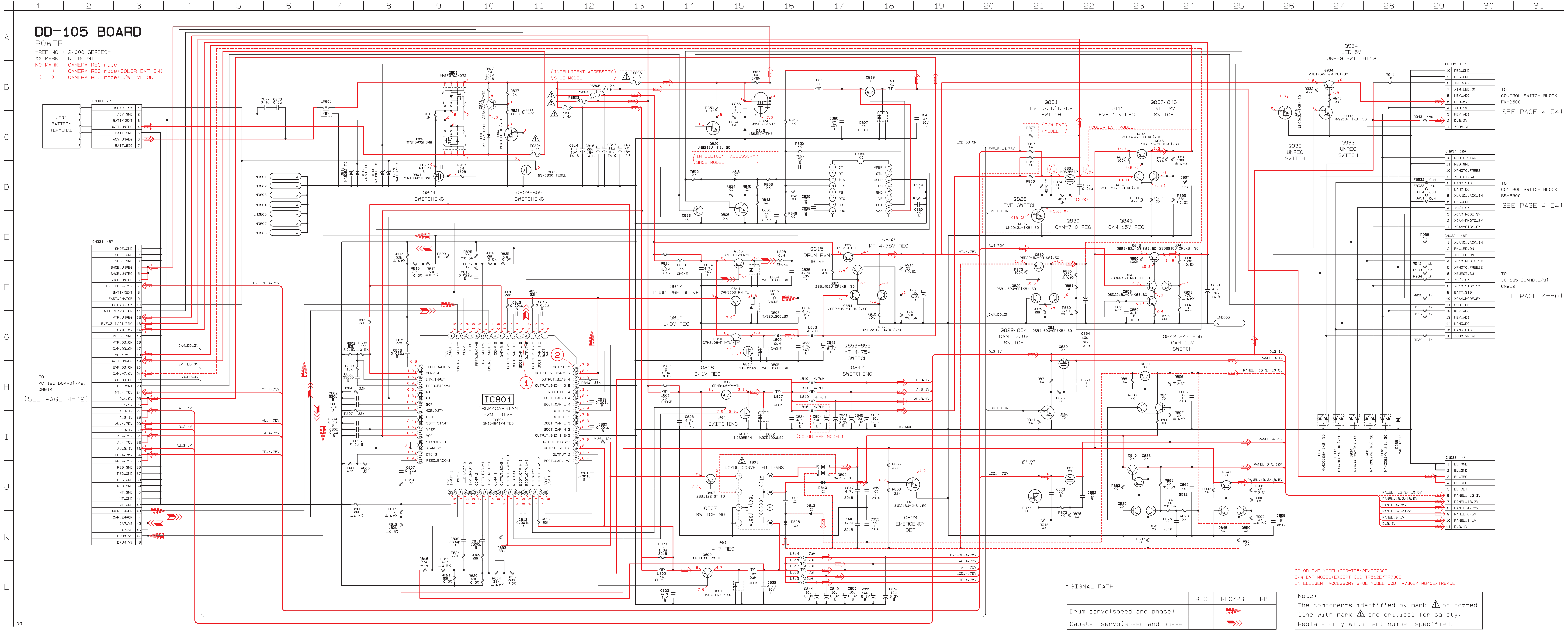
C801	E-3
C802	E-3
C803	D-3
C804	E-3
C805	E-3
C806	E-3
C807	E-2
C808	E-3
C809	D-2
C810	D-3
C811	D-2
C812	D-4
C813	D-2
C814	E-8
C815	C-4
C816	E-9
C817	E-8
C819	C-3
C820	C-3
C821	C-2
C822	E-8
C823	C-4
C824	C-2
C825	B-3
C826	D-8
C827	E-2
C828	E-2
C829	E-2
C830	D-2
C831	E-2
C832	B-3
C833	B-3
C834	C-4
C836	B-2
C837	C-2
C838	C-3
C840	D-8
C841	B-4
C843	C-4
C844	A-3
C846	B-3
C847	B-7
C848	B-7
C849	A-2
C850	A-3
C851	B-4
C852	B-8
C853	B-7
C854	B-3
C855	A-3
C856	E-3
C857	A-2
C860	A-6
C861	A-7
C862	A-2
C863	B-6
C864	A-5
C866	A-6
C867	A-7
C868	B-6
C869	A-6
C871	B-2
C872	F-4
C873	A-2
C874	A-7
C875	B-2
C876	C-6
C877	D-6
C885	A-6
CN801	C-6
CN931	C-5
CN932	F-6
CN933	A-4
CN934	D-9
CN935	G-7
D801	B-3
D802	C-3
D803	C-2
D804	C-2
D805	C-3
D806	B-2
D807	D-8
D809	B-7
D810	B-2
D812	B-3
D813	F-4
D814	F-4
D815	F-3
D816	E-3
D817	F-3
D818	D-2
D819	E-3
D838	E-9
D932	G-2
D933	F-4
D934	G-3
D935	F-3
D936	G-3
FB931	D-9
FB932	E-9
FB933	D-9
FB934	D-9
IC801	D-3
IC802	E-2
L801	D-7
L802	D-7
L803	D-8
L804	E-9
L805	B-7
L806	C-8
L807	C-7
L808	B-8
L809	C-7
L810	B-4
L811	B-3
L812	B-3
L813	B-3
L814	A-3
L815	A-3
L816	B-3
L817	A-3
L818	A-2
L819	A-3
L820	D-8
LF801	D-7
PS801	F-3
PS802	F-2
PS803	F-3
PS804	F-2
PS805	F-2
PS806	F-3
Q801	F-4
Q802	E-4
Q803	E-3
Q804	F-3
Q805	F-3
Q806	C-2
Q807	C-3
Q808	C-3
Q809	B-3
Q810	C-2
Q812	C-3
Q813	C-2
Q814	C-2
Q815	C-2
Q817	C-3
Q819	D-8
Q820	E-3
Q823	A-2
Q824	E-2
Q826	A-7
Q827	A-2
Q828	B-5
Q829	B-6
Q830	B-6
Q831	A-7
Q832	B-6
Q833	A-2
Q834	B-6
Q835	A-8
Q836	A-8
Q837	A-7
Q838	A-8
Q839	B-8
Q840	A-8
Q841	A-7
Q842	A-7
Q843	A-7
Q844	A-8
Q845	A-8
Q846	A-7
Q847	A-6
Q848	A-8
Q849	A-7
Q850	A-8
Q851	E-4
Q852	B-2
Q853	B-2
Q854	B-2
Q855	B-2
Q856	A-6
Q932	G-3
Q933	G-3
Q934	G-3
R801	E-2
R802	E-3
R803	E-3
R804	D-3
R805	D-3
R807	E-3
R808	E-2
R808	E-3
R809	D-3
R810	E-2
R811	D-2
R812	D-2
R813	F-4
R814	D-4
R815	D-3
R816	D-4
R817	D-3
R818	D-2
R819	D-2
R820	D-3
R821	D-2
R822	E-3
R822	D-7
R822	D-8
R823	D-7
R824	D-2
R825	D-4
R826	D-4
R827	E-3
R828	F-3
R829	D-2
R830	D-2
R831	F-4
R832	D-4
R833	D-2
R834	D-2
R835	D-4
R836	D-4
R837	D-2
R838	D-3
R839	C-2
R840	C-3
R841	C-3
R842	E-2
R843	C-2
R849	E-2
R850	E-2
R852	D-2
R853	D-2
R854	D-2
R854	D-2
R859	E-3
R864	E-3
R865	A-2
R866	B-2
R867	E-2
R868	A-2
R870	A-7
R871	A-7
R872	B-6
R873	A-5
R874	B-5
R875	A-2
R876	B-5
R877	A-7
R878	A-2
R879	B-6
R880	B-6
R881	B-6
R882	B-6
R883	A-8
R884	B-8
R885	B-7
R887	B-8
R888	B-8
R889	A-7
R890	A-7
R891	A-8
R892	A-8
R893	B-8
R894	A-7
R895	A-6
R896	A-8
R897	A-8
R898	A-7
R899	A-7
R900	A-6
R901	A-6
R902	A-6
R903	A-8
R904	A-8
R905	A-8
R906	A-8
R907	A-8
R908	B-2
R910	B-2
R911	B-2
R912	B-2
R913	E-6
R914	D-2
R915	E-2
R916	A-7
R917	A-7
R918	A-2
R919	A-7
R920	A-7
R924	C-5
R932	G-3
R933	F-7
R934	F-6
R935	F-7
R936	F-6
R937	F-7
R938	F-7
R939	F-6
R940	F-3
R941	G-3
R942	E-9
R943	G-3
T801	B-7



DD-105 BOARD

POWER

-REF.NO. : 2,000 SERIES-
XX MARK : NO MOUNT
NO MARK : CAMERA REC mode
( ) : CAMERA REC mode(COLOR EVF ON)
< > : CAMERA REC mode(B/W EVF ON)


J901 BATTERY TERMINAL
CN801 7P
CN931 48P
TO VC-195 BOARD(7/9) CN914 (SEE PAGE 4-42)
Q801 SWITCHING
Q803-805 SWITCHING
(INTELLIGENT ACCESSORY SHOE MODEL)
IC801 DRUM/CAPSTAN PWM DRIVE SN104243PM-TEB
IC802
Q814 DRUM PWM DRIVE
Q815 DRUM PWM DRIVE
Q852 MT 4.75V REG
Q810 1.9V REG
Q853-855 MT 4.75V SWITCH
Q808 3.1V REG
Q817 SWITCHING
Q812 SWITCHING
(COLOR EVF MODEL)
T801 DC/DC CONVERTER TRANS
Q807 SWITCHING
Q809 4.7 REG
Q823 EMERGENCY DET
Q831 EVF 3.1/4.75V SWITCH
Q841 EVF 12V REG
Q837-846 EVF 12V SWITCH
(B/W EVF MODEL)
(COLOR EVF MODEL)
Q826 EVF SWITCH
Q830 CAM -7.0 REG
Q843 CAM 15V REG
Q829-834 CAM -7.0V SWITCH
Q842-847-856 CAM 15V SWITCH
Q934 LED 5V UNREG SWITCHING
Q932 UNREG SWITCH
Q933 UNREG SWITCH
CN935 10P TO CONTROL SWITCH BLOCK FK-8500 (SEE PAGE 4-54)
CN934 12P TO CONTROL SWITCH BLOCK SS-8500 (SEE PAGE 4-54)
CN932 16P TO VC-195 BOARD(9/9) CN912 (SEE PAGE 4-50)
CN933 XX

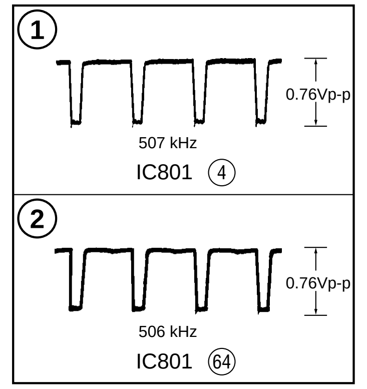
COLOR EVF MODEL:CCD-TR512E/TR730E
B/W EVF MODEL:EXCEPT CCD-TR512E/TR730E
INTELLIGENT ACCESSORY SHOE MODEL:CCD-TR730E/TR840E/TR845E

- SIGNAL PATH

	REC	REC/PB	PB
Drum servo(speed and phase)		⇛	
Capstan servo(speed and phase)		⇛	

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

DD-105 BOARD
CAMERA REC



SECTION 5
ADJUSTMENTS

Refer to page 3 as Table for distinction functions of models and classification

5-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Adjusting driver
- Color monitor
- Regulated power supply
- Vectorscope
- Digital voltmeter

Ref. No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly) Note 1	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	CPC-7 jig	J-6082-382-A	For the color viewfinder adjustment
J-8	Power code Note 2	J-6082-223-A	For adjusting the video section For connecting the battery terminal and DC power supply
J-9	AFM DEV jig	J-6082-312-A	For adjusting the deviation
J-10	Clear chart	J-6080-621-A	
J-11	Extension cable (16P, 0.5 mm)	J-6082-357-A	For extension between the CD-181 board (CN401) and VC-195 board (CN501)
J-12	Extension cable (48P, 0.8 mm)	J-6082-188-A	For extension between the DD-105 board (CN931) and VC-195 board (CN914)

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note 2: Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the “ADJ” side, or press the battery switch of the battery terminal using adhesive tape, etc.

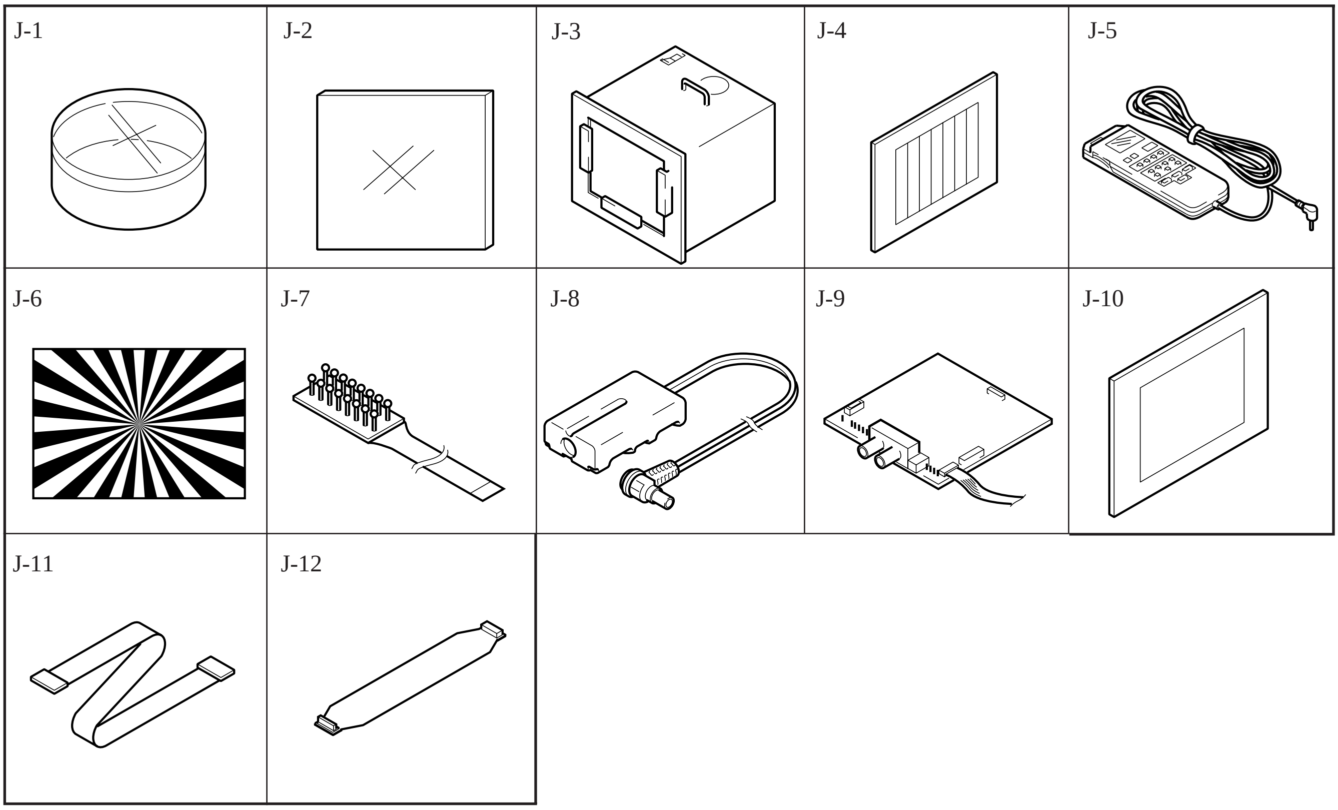


Fig. 5-1-1.

1-1-2. Preparations

Note 1: For details of how remove the cabinet and boards, refer to "2. DISASSEMBLY".

Note 2: When performing only the adjustments, the lens block and boards need not be disassembled.

1) Connect the equipment for adjustments according to Fig. 5-1-3, 4.
2) By setting the "Forced Camera Power ON mode", the camera power can be turned ON even if the front panel block (MA-311 board, power switch, microphone unit) has been removed. When removing the front panel block disconnect the following connector.
    1. VC-195 board CN903 (23P 0.5mm)
3) The intelligent accessory shoe (Intelligent accessory shoe model) need not be assembled. If removing it. disconnect the following connector.
    1. VC-195 board CN909 (10P, 0.5mm)

Note 3: As removing the cabinet (R) (removing the VC-195 board CN911) means removing the lithium 3V power supply (CF-49 board) , data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on the history use. (Refer to the "Service Mode" of "VIDEO SECTION ADJUSTMENT" for the data on the history use.)

Note 4: Setting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
   The above procedure will enable the camera power to be turned on with the front panel block removed. After completing adjustments, be sure to exit the "Forced Camera Power ON Mode".

Note 5: Exiting the "Forced Camera Power ON" Mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 0, address: 01, and set data: 00.

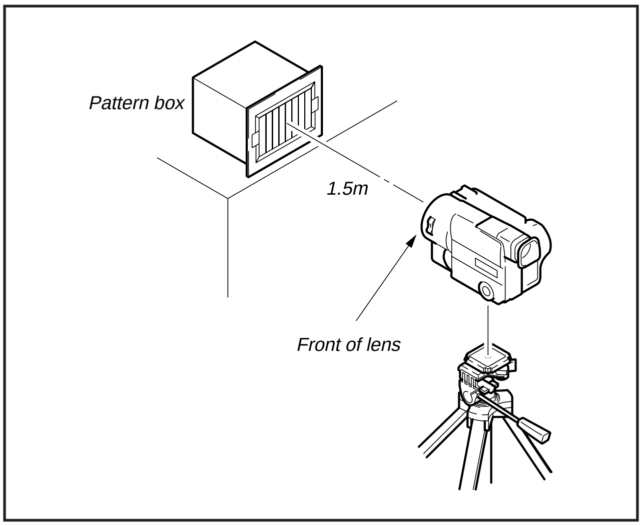
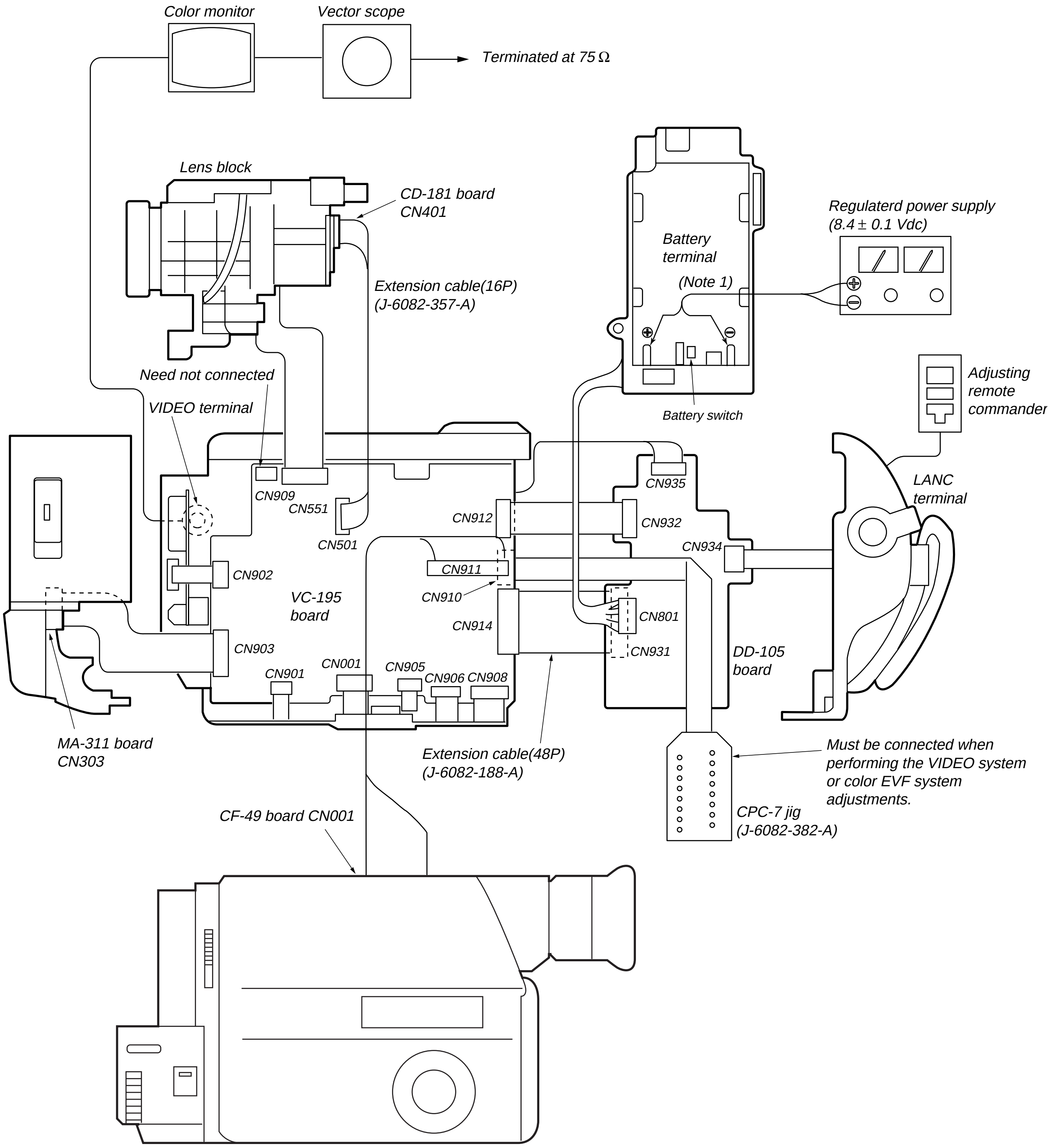


Fig. 5-1-2.


Color monitor
Vector scope
Terminated at 75 Ω
Lens block
CD-181 board
CN401
Extension cable(16P)
(J-6082-357-A)
Battery
terminal
(Note 1)
Regulaterd power supply
(8.4 ± 0.1 Vdc)
Battery switch
Adjusting
remote
commander
LANC
terminal
Need not connected
VIDEO terminal
CN909
CN551
CN501
CN902
CN903
CN901
CN001
CN905
CN906
CN908
VC-195
board
CN912
CN911
CN910
CN914
CN935
CN932
CN934
CN801
CN931
DD-105
board
MA-311 board
CN303
Extension cable(48P)
(J-6082-188-A)
Must be connected when
performing the VIDEO system
or color EVF system
adjustments.
CPC-7 jig
(J-6082-382-A)
CF-49 board CN001

Note 1: Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the “ADJ” side, or press the battery switch of the battery terminal using adhesive tape, etc. or use the AC power adaptor.

Fig. 5-1-3.

1-1-3.Precaution

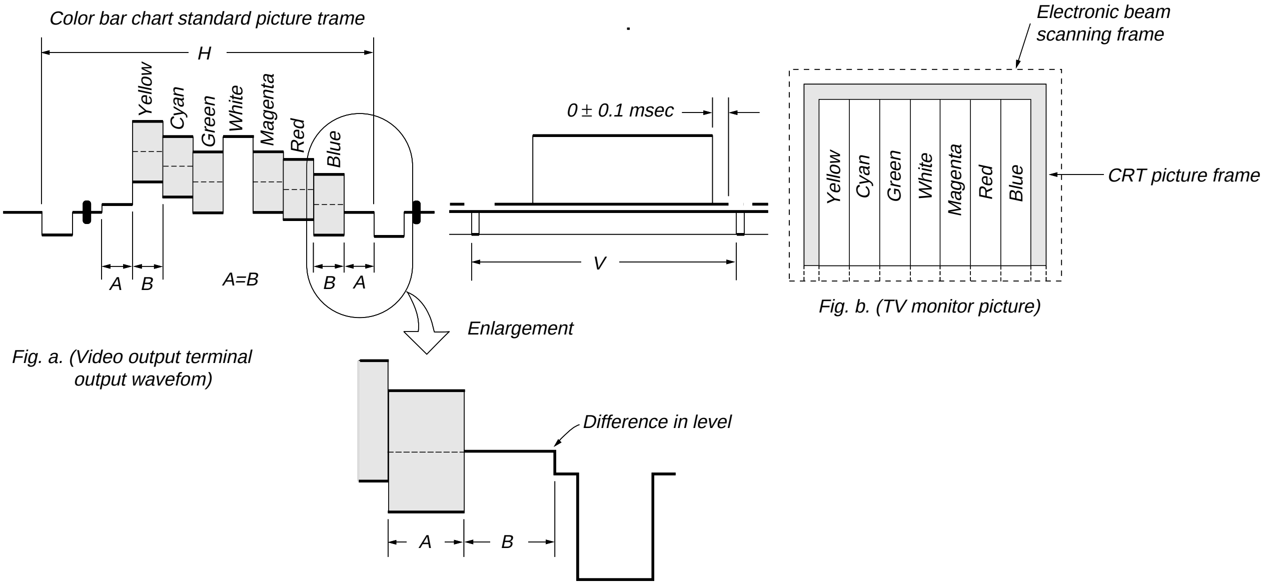
1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

1. POWER switch (MA-311 board) .... CAMERA
2. NIGHT SHOT switch (Lens Block) .... OFF
   (Night shot model)
3. DEMO MODE (Menu display) .... OFF
4. DIGITAL ZOOM (Menu display) .... OFF
5. STEADY SHOT (Menu display) .... OFF
6. FOCUS switch (MF-8500) .... MANUAL
   (Manual Focus model)
7. PROGRAM AE (CF-49 board) .... Auto
8. BACK LIGHT (CF-49 board) .... OFF
9. PICTURE EFECT (CF-49 board) .... OFF
10. 16 : 9 WIDE (MENU display) .... OFF

2. Adjusting Procedure

Adjust in the given order.


Color bar chart standard picture trame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A
Fig. a. (Video output terminal output wavefom)
Enlargement
Difference in level
A
B
0 ± 0.1 msec
V
Electronic beam scanning frame
Yellow
Cyan
Green
White
Magenta
Red
Blue
CRT picture frame
Fig. b. (TV monitor picture)

Adjust the camera zoom and direction to obtain the output wavefom shown in Fig. a and the TV monitor display shown in Fig. b.

Fig. 5-1-4.

3. Subject

1) Color bar chart (Standard picture frame)
   Adjust the picture frame as shown in Fig. 5-1-4. if adjustments are performed using the color bar chart.
   (Standard picture frame)
2) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box, and insert a clear chart in its place. (Do not perform zoom operations during this time.)
3) Chart for flange back adjustment
   Combine a white A0 size (1189 mm x 841 mm) paper to a black one, and make the chart shown in Fig. 5-1-5.

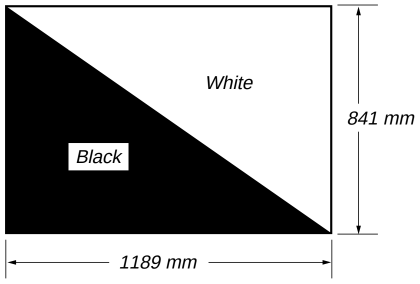

White
Black
841 mm
1189 mm

Fig. 5-1-5.

Note : Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the adjusting remote commander

1) Connect the adjusting remote commander to the LANC terminal.
2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 5-1-6.

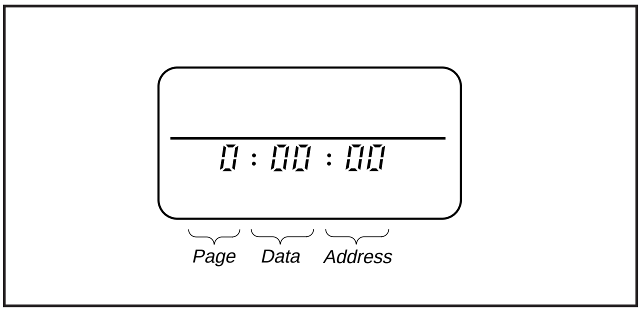


Fig. 5-1-6.

3) Operate the adjusting remote commander as follows.
   - Changing the page
     The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH– button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Display	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal notation conversion value	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 5-1-1.

   - Changing the address
     The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.
   - Changing the data (Data setting)
     The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed.
     There are altogether 256 data, from 00 to FF.
   - Writing the adjustment data
     The PAUSE button must be pressed to write the adjustment data (D, E, F page) in the nonvolatile memory.
     (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)

4) Select page: 0, address: 01, and set the data to 01, and enables Page D and E, F to be adjusted.
5) After completing all adjustments, set data: 00 to page: 0, address: 01 and turn off the main power supply (8.4V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation, calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 5-1-2. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation

The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① → **B (b)**	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) indicate the adjusting remote commander display.

(Example) In the case that the DDS display and the adjusting remote commander display are BD (bd).
As the upper digit of the hexadecimal notation is B (b), and the lower digit is D (d), the intersection “189" of the ① and ② in the above table is the decimal notation to be calculated.

Table 5-1-2.

1-2. INITIALIZATION OF D, E, F PAGE DATA

1. Initializing the D,E,F Page Data

Note 1: If "Initializing the D, E, F Page Data" is performed, all data of the D page, E page and F page will be initialized. (It is impossible to initialize a single page.)

Note 2: If the D,E,F page data has been initialized, "Modification of D, E, F Page Data" and all adjustments need to be performed again.

Note 3: < > : NTSC model (CCD-TR311)
[ ] : PAL model (CCD-TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E/TR840E/TR845E)

Adjusting page	D
Adjusting Address	00 to 6F
Adjusting page	F
Adjusting Address	00 to FF
Adjusting page	E
Adjusting Address	00 to FF

Initializing Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 00, and set data: 55 <NTSC> or data : 51 [PAL].
3) Select page: 2, address: 01, set data: 55<NTSC> or data : 51 [PAL], and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 02, and check that the data is 01.
5) Select page: 3, address: 00, and set data: 29.
6) Select page: 3, address: 01, set data: 29, and press the PAUSE button of the adjusting remote commander.
7) Select page: 0, address: 01, and set data: 00.
8) Perform "Modification of D,E,F Page Data".

2. Modification of D, E, F Page Data

If the D, E, F page data has been initialized, change the data of the "Fixed data-2" address shown in the following tables by manual input.

Modifying Method:

1) Before changing the data, select page: 0, address: 01, and set data: 01.
2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.

Note : If copy the data built in the different model, the camcorder may not operate.

3) When changing the data, press the PAUSE button of the adjusting remote commander each time when setting new data to write the data in the non-volatile memory.
4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.
5) After compleating "Modification of D, E, F Page Data" select page: 0, address: 01, and set data: 00. Also perform all adjustments.

3. D Page Table

Note1 :

Fixed data-1 : Initialized data.
(Refer to “1. Initializing the D,E,F Page Data”.)
Fixed data-2 : Modified data.
(Refer to “2. Modification of D, E, F Page Data”).

Address	Initial Value		Remark
	NTSC	PAL	
00 to 0F			
10	00	00	Fixed data-1 (Initialized data)
11	00	00	
12	00	00	
13			Fixed data-2 (Modified data, copy the data built in the same model.)
14			
15			
16			
17			
18			
19			
1A			
1B			
1C			
1D			
1E			
1F			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
2A			Fixed data-1 (Initialized data)
2B			
2C			
2D			
2E			Fixed data-2
2F			
30	88	88	Battery end adj.
31	8D	8D	
32	A8	A8	
33	BD	BD	
34	C8	C8	
35			Fixed data-2 (Modified data, copy the data built in the same model.)
36			
37			
38			
39			
3A			
3B			
3C			
3D			
3E			
3F			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
4A			

Address	Initial Value		Remark
	NTSC	PAL	
4B			Fixed data-1 (Initialized data)
4C			
4D			
4E			
4F			
50			Fixed data-2 (Modified data, copy the data built in the same model.)
51			
52			
53			
54			
55			
56			
57			
58			
59			
5A			
5B			
5C			
5D			
5E			
5F			
60			Fixed data-1 (Initialized data)
61			
62			
63			
64			
65			
66			
67			
68			
69			
6A			
6B			
6C			
6D			
6E			
6F			

4. F Page table

Note 1:

Fixed data-1 : Initialized data.
(Refer to “1. Initializing the D,E,F Page Data”.)
Fixed data-2 : Modified data.
(Refer to “2. Modification of D, E, F Page Data”).

Note 2: There are three models classified by CCD imager types as shown below, and the initial value of adjustment is different according to the model.

NTSC 510H model : CCD-TR311
PAL 510H model : CCD-TR311E/TR411E/TR412E/TR511E/TR512E
PAL 760H model : CCD-TR640E/TR730E/TR840E/TR845E

Note 3 : There are three models classified by VTR formats as shown below, and the initial value of adjustment is different according to the model.

NTSC Standard8 model : CCD-TR311
PAL Standard8 model : CCD-TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E
PAL Hi8 model : CCD-TR840E/TR845E

Address	Initial Value		Remark
	NTSC	PAL	
00 to 0F			
10	00	00	Emergency memory address
11	00	00	
12	00	00	
13	00	00	
14	00	00	
15	00	00	
16	00	00	
17	00	00	
18	00	00	
19	00	00	
1A	00	00	
1B	00	00	
1C			Fixed data-2
1D			
1E			
1F			
20			
21	D2	<D2>, [D0]	G-CAM flip adj. < > : PAL 760H model [ ] : PAL 510H model
22			Fixed data-2
23			
24			Fixed data-1
25			(Color reproduction adj.)
26			Fixed data-2
27			
28			
29			Fixed data-1
2A			
2B			Fixed data-2
2C	A0	A0	28MHz origin osc. adj.
2D			Fixed data-2
2E			Fixed data-1
2F	80	80	Hall adj.
30	80	80	
31	18	18/08	Max gain adj. Note 2 : 510H model/ 760H model
32			Fixed data-1
33			
34	1B	1B	Color reproduction adj.
35			Fixed data-1
36	42	42	Color reproduction adj.
37			Fixed data-1
38			
39			
3A	89	89	Auto white balance adj.
3B	59	59	
3C	38	38	IRIS IN/OUT adj.
3D	41	41	
3E	25	25	Flange back adj.
3F	00	00	
40	19	19	
41	00	00	
42	35	35	
43	52	52	Angular velocity sensor sensitivity adj.
44	52	52	
45	7A	7A	1.5MHz deviation adj.
46	8D	8D	1.7MHz deviation adj.
47	7A	7A	BPF f0 adj.
48			Fixed data-1
49	6B	6B	Y OUT level adj.
4A	40	40	AFC f0 adj.
4B	9A	9A	C OUT level adj.
4C			Fixed data-1
4D	7B	7B	Filter f0 adj.
4E	60	60	RP filter f0 adj.
4F			Fixed data-1
50			
51			
52			
53	40	40	REC Y current adj. (Addresses 57 to 5A are fixed data addresses.)
54	40	40	
55	5F	40	
56	5F	40	
57	80	A1/80	Note 3 : Hi8 model/ Standard8 model
58	80	95/80	
59	80	A1/80	
5A	80	95/80	
5B	50	50	REC L level adj. (Addresses 63 to 64 are fixed data addresses.)
5C	50	50	
5D	43	50	
5E	43	50	
5F	66	66	
60	66	66	
61	67	66	
62	67	66	
63	80	7A/80	Note 3 : Hi8 model/ Standard8 model
64	80	7A/80	
65	80	80	REC C current adj.
66			Fixed data-1
67			
68			
69	3C	3C	CAP FG offset adj.
6A			Fixed data-2
6B			Fixed data-1
6C			
6D			
6E			
6F			
70	3B	3B	AWB standard data input adj.
71	FF	FF	
72	56	56	
73	7D	7D	
74			Fixed data-1
75			
76	1B	1B	Flange back adj.
77	54	54	
78	25	25	
79	80	80	
7A	10	10	
7B	FF	FF	

Address	Initial Value		Remark
	NTSC	PAL	
7C	0A	0A	Switching position adj.
7D	00	00	
7E			Fixed data-1
7F			
80			Fixed data-2
81			
82			Fixed data-1
83			
84			Fixed data-2
85			Fixed data-1
86			Fixed data-2
87			Fixed data-1
88			
89			
8A			
8B			
8C			
8D			
8E			Fixed data-2
8F			Fixed data-1
90			
91			
92			
93			
94			Fixed data-2
95			
96			Fixed data-1
97			
98			Fixed data-2
99			Fixed data-1
9A			Fixed data-2
9B			Fixed data-1
9C			Fixed data-2
9D			Fixed data-1
9E			Fixed data-2
9F			Fixed data-1
A0			Fixed data-2
A1			
A2			
A3			
A4			
A5			Fixed data-1
A6			Fixed data-2
A7			
A8			
A9			
AA			Fixed data-1
AB			
AC			Fixed data-2
AD			Fixed data-1
AE			Fixed data-2
AF			Fixed data-1
B0			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
BA			
BB			
BC			
BD			

Address	Initial Value		Remark
	NTSC	PAL	
BE			Fixed data-2
BF			
C0			Fixed data-1
C1			
C2			
C3			
C4			
C5			Fixed data-2
C6			Fixed data-1
C7			
C8			Fixed data-2
C9			
CA			Fixed data-1
CB			
CC			
CD			
CE			
CF			
D0			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			Fixed data-2
DA			Fixed data-1
DB			
DC			Fixed data-2
DD			Fixed data-1
DE			
DF			
E0			
E1			
E2			
E3			Fixed data-2
E4			
E5			Fixed data-1
E6			Fixed data-2
E7			Fixed data-1
E8			
E9			
EA			
EB			Fixed data-2
EC			
ED			Fixed data-1
EE			
EF			
F0			
F1			
F2			Fixed data-2
F3			Fixed data-1
F4			
F5	FF	FF	Color reproduction adj.
F6	F6	F4	
F7			Fixed data-1
F8			
F9			
FA			
FB			
FC			
FD			
FE			
FF			

5. E Page Table

Note 1:

Fixed data-1 : Initialized data.
(Refer to “1. Initializing the D,E,F Page Data”.)
Fixed data-2 : Modified data.
(Refer to “2. Modification of D, E, F Page Data”).

Address	Initial Value		Remark
	NTSC	PAL	
00			Fixed data-1
01			
02			
03			
04			
05			
06			
07			
08			
09			
0A			
0B			
0C			
0D			
0E			
0F			
10			
11			
12			
13			
14			Fixed data-2
15			Fixed data-1
16			
17			
18			
19			
1A			
1B			
1C			
1D			
1E			
1F			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
2A			
2B			Fixed data-2
2C			
2D			
2E			
2F			Fixed data-1
30			
31			
32			
33			
34			
35			
36			
37			
38			Fixed data-2
39			
3A			
3B			Fixed data-1
3C			
3D			
3E			
3F			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
4A			
4B			
4C			
4D			
4E			
4F			Fixed data-2
50			Fixed data-1
51			Fixed data-2
52			
53			Fixed data-1
54			
55			
56			
57			
58			
59			Fixed data-2
5A			
5B			Fixed data-1
5C			Fixed data-2
5D			Fixed data-1
5E			
5F			
60			Fixed data-2
61			
62			
63			
64			
65			
66			
67			
68			Fixed data-1
69			
6A			
6B			Fixed data-2
6C			
6D			Fixed data-1
6E			Fixed data-2
6F			
70			
71			
72			Fixed data-1
73			Fixed data-2
74			Fixed data-1
75			Fixed data-2
76 to 99			Fixed data-1

Address	Initial Value		Remark
	NTSC	PAL	
9A			Fixed data-2
9B			Fixed data-1
9C			Fixed data-2
9D			Fixed data-1
9E			
9F			
A0			Fixed data-2
A1			
A2			
A3			
A4			Fixed data-1
A5			
A6			
A7			
A8			
A9			
AA			
AB			
AC			
AD			
AE			
AF			
B0			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
BA			
BB			
BC			Fixed data-2
BD			
BE			
BF			Fixed data-1
C0			
C1			
C2	B0	B0	VCO adj. (Color EVF)
C3	80	80	Bright adj. (Color EVF)
C4	77	77	Contrast adj. (Color EVF)
C5	80	80	White balance adj. (Color EVF)
C6	80	80	
C7			Fixed data-2
C8			
C9			
CA			
CB			
CC	B0	B0	Backlight consumption current adj. (Color EVF)
CD			Fixed data-1
CE			
CF			
D0			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			

Address	Initial Value		Remark
	NTSC	PAL	
D9			Fixed data-1
DA			
DB			
DC			
DD			
DE			
DF			
E0			
E1			
E2			
E3			
E4			
E5			
E6			
E7			
E8			
E9			
EA			Fixed data-2
EB			
EC			Fixed data-1
ED			
EE			
EF			Fixed data-2
F0			Fixed data-1
F1			
F2			
F3			Fixed data-2
F4			Fixed data-1
F5			
F6			
F7			
F8			
F9			
FA			
FB			
FC to FF			

1-3. CAMERA SYSTEM ADJUSTMENTS

Before perform the camera system adjustments, Check that the specified value of “28MHz Origin Oscillation Adjustment”, “Y OUT level Adjustment” and “C OUT level Adjustment” of “VIDEO SYSTEM ADJUSTMENT” are satisfied.

1. G-CAM flip Adjustment

Set the color reproduction conditions to optimum.

Subject	Color bar chart standard picture frame
Measurement Point	Display data of page 1 of the adjusting remote commander (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	21

Note 1. Displayed data of page 1 of the adjusting remote commander.

1 : XX : XX
S2
S1

Note 2. [ ] : CCD-TR311/TR640E/TR730E/TR840E/TR845E
< > : CCD-TR311E/TR411E/TR412E/TR511E/TR512E

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 16.
3) Select page: F, address: 21, set data: [D2] <D0>, and press the PAUSE button of the adjusting remote commander.
4) Select page 1 of the adjusting remote commander, and compare the higher 2 digits (S1) and lower 2 digits (S2) of the 4-degits display data.
   When S1<S2
   Perform steps 5) onwards.
   When S1≧S2
   Perform steps “Processing after Completing Adjustments”.
5) Select page: F, address: 21, set data: [52] <50>, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Select page: 0, address: 03, and set data: 00.
2) Select page: 0, address: 01, and set data: 00.

2. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and offset.

Subject	Not required
Measurement Point	DDS display data of EVF or TV monitor (Note 3)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	2F, 30
Specified Value	90 to 94 during IRIS OPEN (Note 1) 19 to 1D during IRIS CLOSE (Note 2)

Note 1: Select page: 2, address: 01, set data: 01, and press the PAUSE button of the adjusting remote commander.

Note 2: Select page: 2, address: 01, set data: 03, and press the PAUSE button of the adjusting remote commander.

Note 3: DDS display data of EVF or TV monitor.

00 00XX
→ Object data

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 03.
3) Select page: D, address: 11, set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, set data: 03, and press the PAUSE button.
5) Select page: F, address: 30, set data: 80, and press the PAUSE button.
6) Select page: F, address: 2F, set data: 40, and press the PAUSE button.
7) Read the DDS display data (the bottom two digits of the display data at the bottom right of the EVF display or the TV monitor), and this data is named K_2.
8) Select page: F, address: 2F, set data: 30, and press the PAUSE button.
9) Read the DDS display data, and this data is named K_1.
10) Select page: 2, address: 01, set data: 01, and press the PAUSE button.
11) Read the DDS display data, and this data is named W_1.
12) Select page: F, address: 2F, set data: 40, and press the PAUSE button.
13) Read the DDS display data, and this data is named W_2.
14) Convert W_1, W_2, K_1, K_2, to decimal notation, and obtain W_1' , W_2' , K_1' , K_2'. (Refer to Table 5-1-2. "Hexadecimal notation - decimal notation conversion table".)
15) Calculate X_1' using the following equations (decimal notation calculation).
    $A' = W_2' + K_1' - W_1' - K_2'$ Equation 1
    $B' = W_1' - K_1'$ Equation 2
    $X_1' = [1904 + (48 \times A') - (16 \times B')] / A'$ Equation 3
16) Convert X_1' to hexadecimal notation, and obtain X_1.
    (Round off to one decimal place)
17) Select page: F, address: 2F, set data: X_1, and press the PAUSE button.
18) Select page: 2, address: 01, and set data: 01, and press the PAUSE button.
19) Select page: F, address: 30, change the data and adjust the DDS display data to "92".
20) Press the PAUSE button of the adjusting remote commander.
21) Select page: 2, address: 01, and set data: 03, and press the PAUSE button.
22) Read the DDS display data, and this data is named K_0. If K_0 lies within the "19" to "1D" range, perform "Processing after completing adjustments". If it is lies outside the range, perform the following adjustments.
23) Convert K_0 to decimal notation, and obtain K_0'.
24) Calculate X_2' using the following equations (decimal notation calculation).
    $C' = 146 - B' - K_0'$ Equation 4
    $X_2' = [(119 - B') \times (X_1' - 48) + (48 \times C')] / C'$ Equation 5
    (X_1' and B' are values obtained from equations 2) and 3))
25) Convert X_2' to hexadecimal notation, and obtain X_2.
    (Round off to one decimal place)
26) Select page: F, address: 2F, set data: X_2, and press the PAUSE button.
27) Select page: 2, address: 01, set data: 03, and press the PAUSE button.
28) Select page: F, address: 30, change the data and adjust the DDS display data to "1B".
29) Press the PAUSE button of the adjusting remote commander.
30) Select page: 2, address: 01, set data: 01, and press the PAUSE button.
31) Check the DDS display data lies within the "90" to "94" range.

Processing after Completing Adjustments

1) Select page: D, address: 11, and set data: 00, and press the PAUSE button.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button.
4) Select page: 0, address: 03, and set data: 00.

3. Flange Back Adjustment

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

3-1. Flange Back Adjustment(1)

Subject	Flange back adjustment chart (2.0 m from the front of the lens) (Luminance: 300 ± 50 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Check that at both the zoom lens TELE end and WIDE end, the center of the chart for the flange back adjustment and center of the exposure screen coincide.
2) Select page: 0, address: 01, and set data: 01.
3) Check that the data of page: F, address: 3E to 42, 76 to 7B is the initial value (See table below).

Address	Data	Address	Data
3E	25	77	54
3F	00	78	25
40	19	79	80
41	00	7A	10
42	35	7B	FF
76	1B		

4) Select page: 2, address: 02, and check that the data is “00 “.
5) Select page: 2, address: 01, set data: 13, and press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 01, set data: 15, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data will be automatically input to page: F, addresses: 3E to 42, 76 to 7B.)
7) Select page: 2, address: 02, and check that the data is „01“.

Processing after Completing Adjustments

1) Turn OFF the main power supply (8.4V).
2) Perform “Flange Adjustment (2)”.

3-2. Flange Back Adjustment (2)

Perform this adjustment after performing “Flange Back Adjustment (1)”.

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away (subject with clear contrast such as building, etc.). (Nearby subjects less than 500 m away should not be in the screen.)
2) Select page: 0, address: 01, and set data: 01.
3) Select page: 2, address: 02, and check that the data is “00”.
4) Select page: 2, address: 01, set data: 13, and press the PAUSE button of the adjusting remote commander.
5) Place a ND filter on the lens so that the optimum image is obtain.
6) Select page: 2, address: 01, set data: 29, and press the PAUSE button of the adjusting remote commander.
   (The adjustment data will be automatically input to page: F, addresses: 3E to 42, 76 to 7B.)
7) Select page: 2, address: 02, and check that the data is “01”.

Processing after Completing Adjustments

1) Select page: 0, address: 01, and set data: 00.
2) Turn OFF the main power supply (8.4V).
3) Perform “Flange Back Check”.

4. Flange Back Check

Subject	Siemens star (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:

1) NIGHT SHOT switch .... OFF

Checking method:

1) Place the Siemens star 2.0m from the front of the lens.
2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
3) Select page: 2, address: 40, and set data: 02.
4) Select page: 2, address: 41, and set data: 01.
5) Shoot the Siemens star with the zoom TELE end.
6) Turn on the auto focus.
7) Check that the lens is focused (Note1).
8) Select page: 2, address: 21, and set data: 10.
9) Shoot the Siemens star with the zoom WIDE end.
10) Observe the TV monitor and check that the lens is focused.

Note 1: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page 1 of the adjusting remote commander.

1) Select page: 0, address: 03, and set data: 0F.
2) Page 1 shows the state of the focus.

1 : 00 : XX → Odd: Focused
Even: Unfocused

Processing after Completing Adjustments

1) Select page: 2, address: 21, and set data: 00.
2) Select page: 0, address: 03, and set data: 00.
3) Select page: 2, address: 40, and set data: 00.
4) Select page: 2, address: 41, and set data: 00.

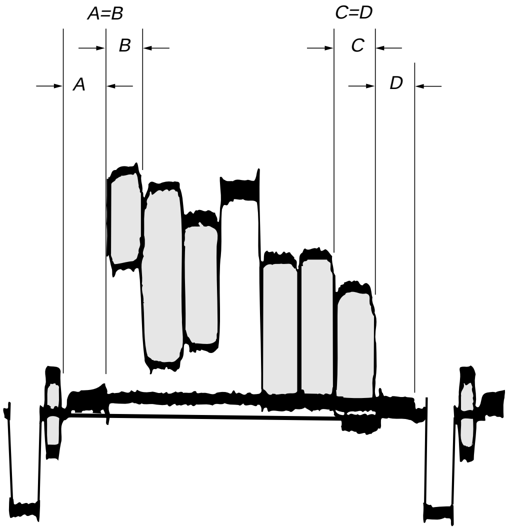
5. Picture Frame Setting

Subject	Color bar chart standard picture frame (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=D, t=0 ± 0.1msec

Setting method:

1) Adjust the zoom and the camera direction, and set to the specified position.
2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using “Color bar chart standard picture frame”.

1. Horizontal period



2. Vertical period

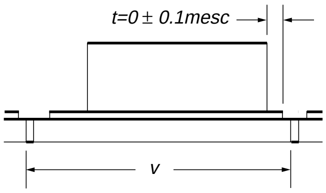


Fig. 5-1-7.

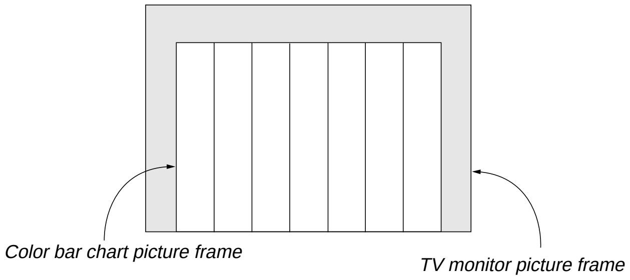


Fig. 5-1-8.

6. Color Reproduction Adjustment

Adjust the color Separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	34, 36, F5, F6
Specified Value	All color luminance points should settle within each color reproduction frame.

Note1: NTSC 510H model (CCD-TR311)
PAL 510H model (CCD-TR311E/TR411E/TR412E/TR511E/TR512E)
PAL 760H model (CCD-TR640E/TR730E/TR840E/TR845E)

Switch setting:

1) NIGHT SHOT switch.. OFF

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 01, set data: 3D, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 25, set data: 3F, and press the PAUSE button of the adjusting remote commander.
4) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
5) Change the data of page: F, address: 34, 36, F5 and F6, and settle each color luminance point in each color reproduction frame.

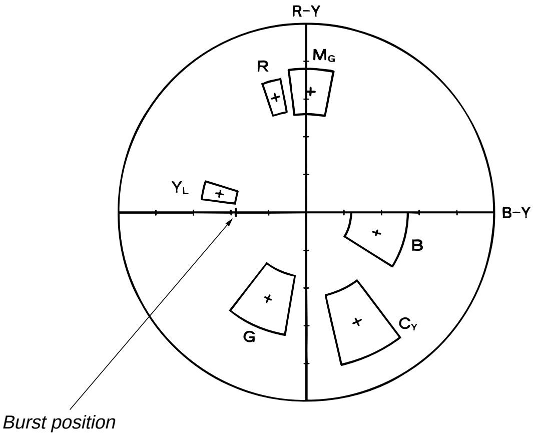
Note 2: Be sure to press the PAUSE button of the adjusting remote commander before changing the of addresses. If not, the new data will not be written to the memory.

6) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.

For NTSC 510H model



For PAL 510H/PAL 760H model

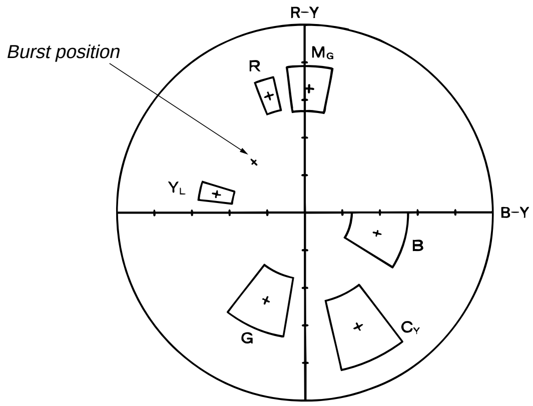


Fig. 5-1-9.

7. IRIS IN/OUT Adjustment

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.

If the level is not correct, the white balance will not be accurate.

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of EVF or TV monitor (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3C, 3D

Note 1: The right four digits of the display data at the right bottom side of the EVF and TV monitor is the LIGHT LEVEL data.

00 XX XX

→ Lower two digits

→ Upper two digits

Switch setting:

1) STEADY SHOT (Menu display) .... OFF
2) NIGHT SHOT switch .... OFF

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 0, address: 03, and set data: 06.
3) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 02.
5) Select page: 2, address: 01, set data: 0B, and press the PAUSE button of the adjusting remote commander.
6) Read the DDS display data (Note 1), and take the upper two digits as D_1 and the lower two as D_2.
7) Convert D_1 to decimal notation, and obtain D_1'. (Refer to Table 5-1-2. “Hexadecimal notation - decimal notation conversion table” of “Service mode”.)
8) Calculate D_3' using the following equations. (Equations 1 and 2 are for decimal notation calculation).
   When $D_2 \geqq$ D0
   $D_3' = D_1' - 21$ .... Equation 1
   When $D_2 <$ D0
   $D_3' = D_1' - 22$ .... Equation 2
9) Convert D_3' to hexadecimal notation, and obtain D_3.
10) Select page: F, address: 3C, set data: D_3, and press the PAUSE button of the adjusting remote commander.
11) Select page: 2, address: 01, set data: 09, and press the PAUSE button of the adjusting remote commander.
12) Read the DDS display data (Note 1), and take the upper two digits as D_4 and the lower two as D_5.
13) Convert D_4 to decimal notation, and obtain D_4'. (Refer to Table 5-1-2. “Hexadecimal notation - decimal notation conversion table”.)
14) Calculate D_6' using the following equations. (Equations 3 and 4 are for decimal notation calculation).
   When $D_5 \geqq$ F0
   $D_6' = D_4' - 13$ .... Equation 3
   When $D_5 <$ F0
   $D_6' = D_4' - 14$ .... Equation 4
15) Convert D_6' to hexadecimal notation, and obtain D_6.
16) Select page: F, address: 3D, set data: D_6, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 00.
5) Select page: 0, address: 03, and set data: 00.

8. MAX GAIN Adjustment

Setting the minimum illumination.

If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of EVF or TV monitor (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	31
Specified Value	C0 to FF

Note 1: The right two digits of the display data at the right bottom side of the EVF and TV monitor is the object data.

00 00 XX

→ Object data

Note 2: NTSC 510H model (CCD-TR311)
PAL 510H model (CCD-TR311E/TR411E/TR412E/TR511E/TR512E)
PAL 760H model (CCD-TR640E/TR730E/TR840E/TR845E)

Switch setting:

1) STEADY SHOT (Menu display) .... OFF
2) NIGHT SHOT switch .... OFF

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
3) Select of page: 0, address: 03, and set data: 01.
4) Select page: 2, address: 40, and set data: 02.
5) Select page: 2, address: 56, and set data: 40.
6) Select page: 2, address: 01, set data: 19, and press the PAUSE button of the adjusting remote commander.
7) Select page: F, address: 31, set data: [18] <08>, and press the PAUSE button of the adjusting remote commander.
   Note : [ ] : 510H model
   < > : 760H model
8) Check that the DDS display data (Note 1) lies within the specified value.

Processing after Completing Adjustments

1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 40, and set data: 00.
5) Select page: 2, address: 56, and set data: 00.
6) Select page: 0, address: 03, and set data: 00.

9. Auto White Balance Standard Data Input

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	F
Adjustment Address	70 to 73

Note 1: Perform "Color Reproduction Adjustment" before this adjustment.

Note 2: Check that the data of page: 2, address: 02 is 00. If not, turn the power of the unit OFF/ON.

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Wait for 2 seconds.
3) Select page: 2, address: 01, and set data: 11, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, and set data: 0D, and press the PAUSE button of the adjusting remote commander.
   (When the standard data is take in, the data will be automatically input to page: F, address: 70 to 73.)
5) Select page: 2, address: 02, and check that the data is "01".
6) Perform "Auto White Balance Adjustment".

Processing after Completing Adjustments

1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.

10. Auto White Balance Adjustment

Adjust to the proper auto white balance output data.
If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display of EVF or TV monitor
Measuring Instrument	(Note 1)
Adjustment Page	F
Adjustment Address	3A, 3B
Specified Value	R ratio: 2B40 to 2BC0 B ratio: 5E40 to 5EC0

Note 1: Perform "Auto White Balance Standard Data Input" before this adjustment.

Note 2: The right four digits of the display data at the right bottom side of the EVF and TV monitor is the object data.

00 XXXX → Object data

Switch setting:

1) NIGHT SHOT switch .... OFF

Adjusting method:

1) Place the C14 filter for color temperature correction on the lens.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 01, and set data: 3F, and press the PAUSE button of the adjusting remote commander.
5) Select page: 0, address: 03, and set data: 04.
6) Select page: F, address: 3A, and change the data, and adjust the average value of the DDS display data(Note 2) to the R ratio specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 03, and set data: 05.
9) Select page: F, address: 3B, and change the data, and adjust the average value of the DDS display data(Note 2) to the B ratio specified value.
10) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
2) Select page: 0, address: 01, and set data: 00.
3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 03, and set data: 00.

11. White Balance Check

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-10. A to C

Switch setting:

1) NIGHT SHOT switch .... OFF

Checking method:

1) Check that the lens is not covered with either filter.
2) Select page: 2, address: 01, set data: 0F, and press the PAUSE button of the adjusting remote commander.
3) Check that the center of the white luminance point is within the circle shown Fig. 5-1-10.A.
4) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: 2, address: 01, set data: 23, and press the PAUSE button of the adjusting remote commander.
6) Place the C14 filter on the lens.
7) Check that the center of the white luminance point settles in the circle shown Fig. 5-1-10.B.
8) Remove the C14 filter, and place the ND filter 1.3 (1.0 +0.3) on the lens.
9) Check that the white luminance point stopped moving, and then remove the ND filter 1.3.
10) Check that the center of the white luminance point settles within the circle shown Fig. 5-1-10.C.

Processing after Completing Adjustments

1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.

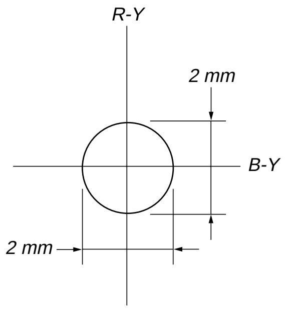


Fig.5-1-10. A

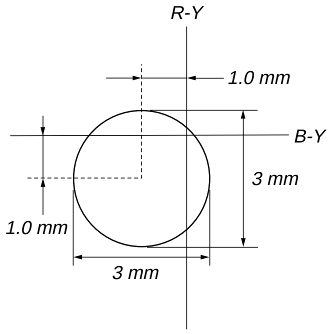


Fig.5-1-10. B

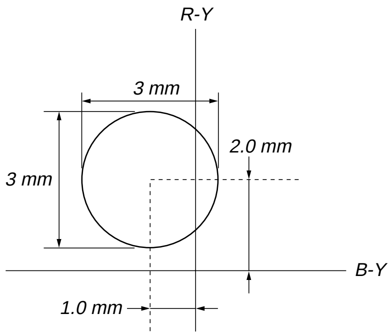


Fig.5-1-10. C

12. Angular Velocity Sensor Sensitivity Adjustment (CCD-TR640E/TR730E/TR840E/TR845E)

- This adjustment is performed only when replacing the angular velocity sensor.
  Although this adjustment need not be performed when the circuit is damaged, etc., check the operations.
- Note down the sensitivity displayed on the angular velocity sensor of the repair parts. At this time, note down also to which board it was attached to.
  Be sure to check because if attached incorrectly, the screen will vibrate up and down or left and right during hand-shake correction operations.

Precautions on the Parts Replacement
There are two types of repair parts.
Type A : ENC03EA or ENC 03JA
Type B : ENC03EB or ENC 03JB
Replace the broken sensor with a same type sensor. If replace with other parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, re-adjust according to the adjusting method after replacement.

Precautions on Angular Velocity Sensor
The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly.

Adjustment page	F
Adjustment Address	43, 44

Note: The sensor sensitivity of SE451 and SE452 of the SE-65 board is written only on the repair parts.

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Read the sensor sensitivity written on SE451 of the SE-65 board, and take this as S_{451}.
3) Read the sensor sensitivity written on SE452 of the SE-65 board, and take this as S_{452}.
4) Calculate D_{43}' and D_{44}' using the following equation (decimal calculation).
   $D_{43}' = 118 / S_{451}$
   $D_{44}' = 106 / S_{452}$
5) Convert D_{43}' and D_{44}' into hexadecimal digits, to obtain D_{43} and D_{44}. (Round off decimal points)
6) Select page: F, address: 43, set data: D_{43}, and press the PAUSE button of the adjusting remote commander.
7) Select page: F, address: 44, set data: D_{44}, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments
1) Select page: 0, address: 01, and set data: 00.
2) Check that the steady shot operations have been performed normally.

1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

(CCD-TR512E/TR730E)

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

[Adjusting connector]

Most of the measuring points for adjusting the viewfinder system are concentrated in CN910 of the VC-195 board.

Connect the measuring instruments via the CPC-7 jig (J-6082-382-A).

The following table shows the Pin No. and signal name of CN910.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

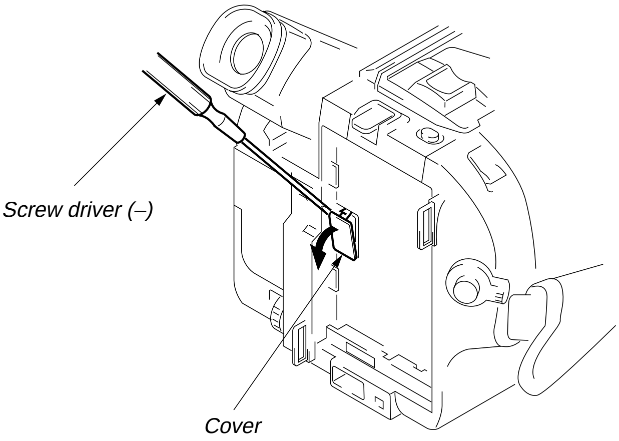


Fig.5-1-11.

1. EVF Initial Data Input

Mode	VTR stop
Signal	No signal
Adjustment Page	E
Adjusting Address	C2 to CD

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.

2) Select page: E, and input the data in the following table.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

3) Select page: 0, address: 01, and set data: 00.

Address	Data	Remark
C2	B0	VCO adjustment
C3	80	Bright adjustment
C4	77	Contrast adjustment
C5	80	White balance adjustment
C6	80	White balance adjustment
C7	68	Fixed value
C8	50	Fixed value
C9	F8	Fixed value
CA	A8	Fixed value
CB	3C	Fixed value
CC	B0	Backlight Consumption Current Adjustment
CD	70	Fixed value

2. VCO Adjustment (VF-119 board)

Set the VCO free-run frequency. If deviated, the EVF screen will be blurred.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ⑱ of CN910 (VCO) on VC-195 board
Measuring instrument	Oscilloscope (DC range)
Adjustment page	E
Adjustment address	C2
Specified value	A = 1.8 ± 0.1Vdc

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Check the GND level of the oscilloscope.
5) Select page: E, address: C2, change the data and set the VCO output voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

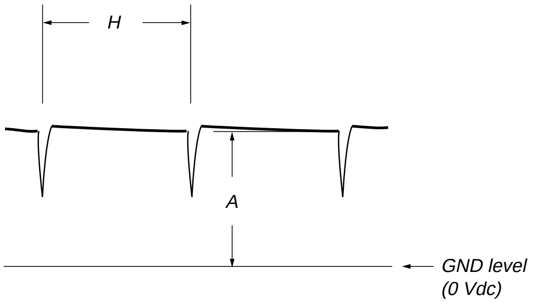


Fig. 5-1-12.

3. Bright Adjustment (VF-119 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ⑯ of CN910 (EVF VG) on VC-195 board
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	C3
Specified value	A = 7.2 ± 0.1 V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: C3, change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

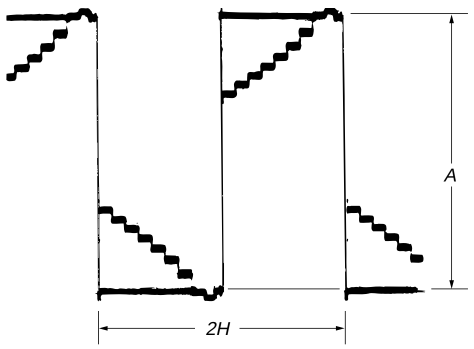


Fig. 5-1-13.

4. Contrast Adjustment (VF-119 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑯ of CN910 (EVF VG) on VC-195 board
Measuring Instrument	Oscilloscope
Adjustment Page	E
Adjustment Address	C4
Specified Value	A = 2.0 ± 0.1V

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: C4, change the data and set the voltage (A) between the 7 step peak and the pedestal to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

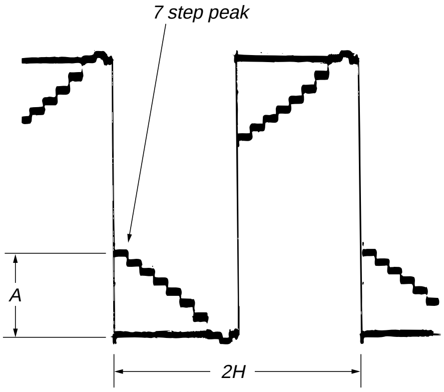


Fig. 5-1-14.

5. Backlight Consumption Current Adjustment (VF-120 board)

Set the backlight luminance and color temperature.
If deviated, the image may become dark or bright.

Mode	VTR stop
Signal	No signal
Measurement Point	+ Probe: Pin ⑭ of CN910 (EVF BL 4.75V) on VC-195 board – Probe: Pin ⑬ of CN910 (EVF BL) on VC-195 board
Measuring Instrument	Digital voltmeter
Adjustment Page	E
Adjustment Address	CC
Specified Value	A = 21.0 ± 1.0 mVdc

Note: Adjust 30 seconds after running on the power supply.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
3) Select page: E, address: CC, change the data and set the voltage difference (A) between Pin ⑭ of CN910 (EVF BL 4.75V) and Pin ⑬ of CN910 (EVF BL) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

6. White Balance Adjustment (VF-119 board)

Correct the white balance.
If deviated, the reproduction of the EVF screen may degenerate.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on EVF screen
Measuring Instrument	
Adjustment Page	E
Adjustment Address	C5, C6
Specified Value	The EVF screen should not be colored.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 7D, and set data: 03.
4) Select page: E, address: C5 and C6, set the data to the initial value.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	C5	C6
Data	80	80

5) Check that the LCD screen is not colored. If colored, change the data of page: E, address: C5 and C6 so that the EVF screen is not colored.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

6) Select page: 2, address: 7D, and set data: 00.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

1-5. MONOCHROME ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS
(CCD-TR311/TR311E/TR411E/TR412E/TR511E/ TR640E/TR840E/TR845E)

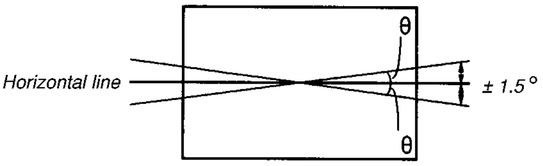
Note: NTSC model: CCD-TR311
PAL model : CCD-TR311E/TR411E/TR412E/TR511E/
TR640E/TR840E/TR845E

1-5-1. Horizontal Slant Check

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Specified Value	± 1.5 °

Adjusting method:

1) Adjust RV904 (BRIGHT) (VF-99 board) so that the CRT can be seen easily and clearly.
2) Check that the difference between the horizontal line and the tilt of the black mask satisfies the specified value.



Specified value : The image should be within ± 1.5° of the horizontal line.

Fig. 5-1-15.

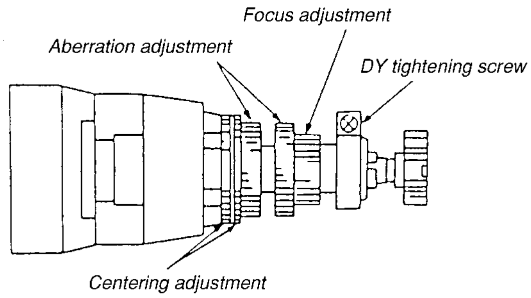


Fig. 5-1-16.

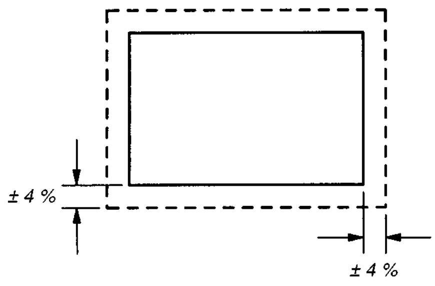
1-5-2. Centering Adjustment

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Specified Value	± 4%

Adjusting method:

1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 5-1-16.)

Note : As the centering position changes due to earth magnetism, rotate it 360˚ in the horizontal direction, and adjust with the center section of the modifying position.



Adjustment value : ± 4 %

Fig. 5-1-17.

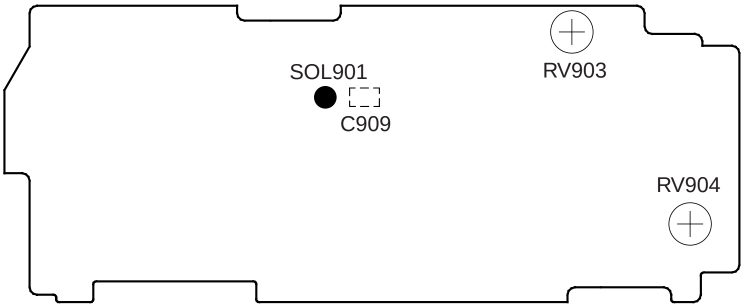
1-5-3. Focus Adjustment

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section

Adjusting method:

1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 5-1-16.)

VF-99 BOARD (SIDE A)



1-5-4. Aberration Adjustment

Mode	VTR stop
Signal	Dot pattern
Specified Value	b1 ≦ 2 • a1 b2 ≦ 0.8 • a2

Adjusting method:

1) Adjust the aberration adjustment ring so that the tracing of the dot satisfies the specified value.
2) If the centering becomes displaced here, perform the centering adjustment from the beginning again.

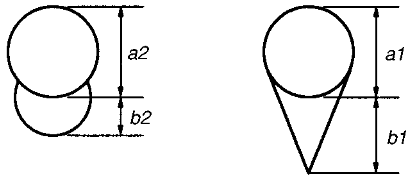


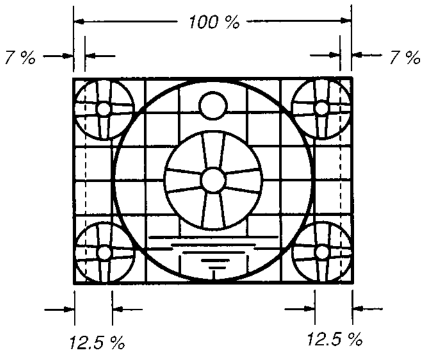
Fig. 5-1-18.

1-5-5. Horizontal Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Adjusting Element	C909 (SOL901)
Specified Value	± 1.5 °

Adjusting method:

1) Rotate RV903, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display.
2) Rotate RV904 so that the brightness is the normal level.
3) Solder or unsolder SOL901 pattern of the H size adjustment capacitor (C909) to “short” or “open”, so that the horizontal direction over scan becomes 14 ± 6% (Left and right totals).



SOL901	Size H
Open	Small
Short	Big

VF-99 BOARD (SIDE A)

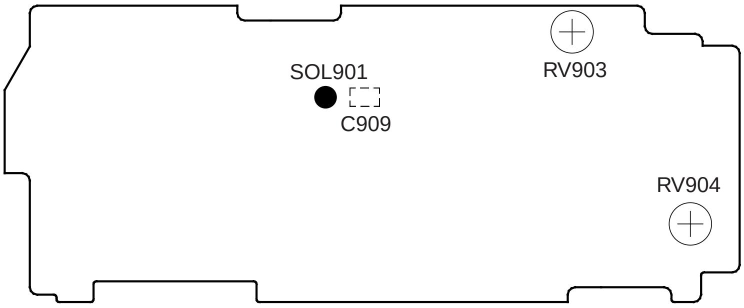


Fig. 5-1-19.

1-5-6. Vertical Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Adjusting Element	RV903
Specified Value	10 ± 3%

Adjusting method:

1) Adjust RV903 so that the vertical direction over scan becomes 10 ± 3% (Top and bottom totals).

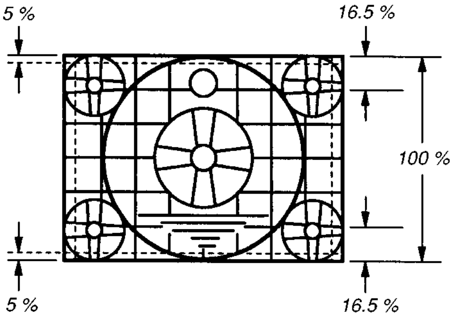


Fig. 5-1-20.

1-5-7. Brightness Adjustments (VF-99 board)

Mode	Playback
Signal	Alighment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Specified Value	RV904

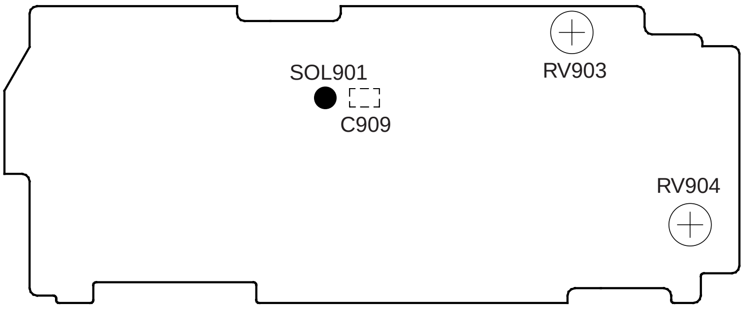
Adjusting method:

1) Rotate RV904, and adjust so that the bright/dark sections of the gray scale are displayed correctly. (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

1-5-8. Horizontal Amplitude, Vertical Amplitude, Focus Check

"1-5-5. Horizontal Amplitude Adjustment" and "1-5-6. Vertical Amplitude Adjustment" should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform "1-5-7. Brightness, Contrast Adjustments" again.
Moreover, check the focus, and if it found to be vague, perform "1-5-3. Focus Adjustment" and "1-5-4. Aberration Adjustment".

VF-99 BOARD (SIDE A)



5-2. MECHANICAL SECTION ADJUSTMENT

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume- “8 mm Video Mechanism Adjustment Manual VII B Mechanism ”.

2-1. OPERATING WITHOUT A CASSETTE

1) Refer to “Section 2 DISASSEMBLY” and supply the power with the cabinet removed. (So that the mechanical deck can be operated.)
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Close the cassette compartment without loading a cassette and complete loading.
5) Select page: 0, address: 01, and set data: 01.
6) Select page: F, address: 2A, and set data: 01, and press the PAUSE button of the adjusting remote commander.
7) Select page: D, address: 10, and set data: 10, and press the PAUSE button of the adjusting remote commander.
8) Disconnect the power supply of the unit.
   By carrying out the above procedure, the unit can be operated without loading a cassette.
   Be sure to carry out “Processing after Operations” after checking the operations.
   Set the data of page: D, address: 10 to the following if the sensor ineffective mode, forced PLAYER (VTR) power supply ON mode or forced camera power supply ON mode are to be used together.
   Forced VTR power supply ON mode 12
   Forced camera power supply ON mode 11

[Processing after Operations]

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 2A, and set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: D, address: 10, and set data: 00, and press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.
5) Disconnect the power supply of the unit.

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller).
2) Connect the adjusting remote commander to the LANC terminal.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 01.
5) Select page: F, address: 2A, and set data: 04 and press the PAUSE button of the adjusting remote commander.
   (Be sure to perform “Processing after operations” after completing adjustments.
6) Connect the oscilloscope.
   Channel 1: Pin ⑥ of CN910 of VC-195 board
   External trigger: Pin ⑪ of CN910 of VC-195 board
   (Connect the oscilloscope via the CPC-7 jig (J-6082-382-A).)
7) Playback the alignment tape for tracking.
   WR5-1NP: For NTSC model: CCD-TR311
   WR5-1CP: For PAL model: CCD-TR311E/TR411E/
   TR412E/TR511E/TR512E/
   TR640E/TR730E/TR840E/
   TR845E
8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit.
   If not flat, perform necessary adjustment according to the separate “8 mm Video Mechanical Adjustment Manual VII (B Mechanism)”.
9) Perform “Processing after operations”, after completing adjustments.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

CN910 of VC-195 board

[Processing after operations]

1) Connect the adjusting remote commander, and turn on the HOLD switch.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 2A, and set data: 00.
4) Press the PAUSE buttonA of the adjusting remote commander.
5) Select page: 0, address: 01, and set data: 00.
6) Remove the power supply from the unit.

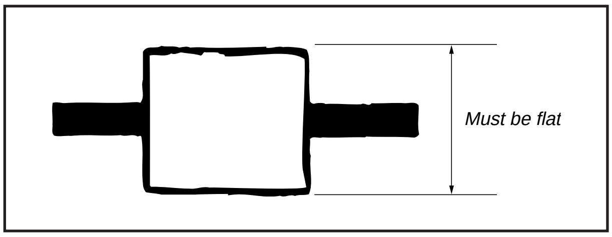


Fig. 5-2-1.

5-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 5-54.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section.

3-1-1. Equipments to be Used

1) TV monitor
2) Oscilloscope: 2 phenomena, band 30 MHz or wider, with delay mode. (Use a 10:1 probe unless specified otherwise.)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuater
10) Regulated power supply
11) Alignment tape

    [For NTSC model]
    - For tracking adjustment (WR5-1NP)
      Part Code: 8-967-995-02
    - For video frequency characteristics adjustment
      (WR5-7NE) Part Code: 8-967-995-13
    - For checking Standard 8 mode operations
      For LP (WR5-4NL)
      Part Code: 8-967-995-51
      For SP (WR5-5NSP)
      Part Code: 8-967-995-42
      Note: The following alignment tapes can also be used.
      WR5-4NSP (8-967-995-41)
    - For checking AFM stereo operations (WR5-9NS)
      Part Code: 8-967-995-23
      For checking BPF adjustment (WR5-11NS)
      Part Code: 8-967-995-71

    [For PAL model]
    - For tracking adjustment (WR5-1CP)
      Part Code: 8-967-995-07
    - For video frequency characteristics adjustment
      (WR5-7NE) Part Code: 8-967-995-18
    - For checking Standard 8 mode operations
      For LP (WR5-4CL)
      Part Code: 8-967-995-56
      For SP (WR5-5CSP)
      Part Code: 8-967-995-47
      Note: The following alignment tapes can also be used.
      1) WR5-3CL (8-967-995-36)
      2) WR5-4CSP (8-967-995-46)
    - For checking Hi8 mode operation
      For SP (WR5-8CSE)
      Part Code: 8-967-995-48
      For LP (WR5-8CLE)
      Part Code: 8-967-995-57
    - For checking AFM stereo operations (WR5-9CS)
      Part Code: 8-967-995-28
      For checking BPF adjustment (WR5-11CS)
      Part Code: 8-967-995-76
12) Remote commander for adjustment (J-6082-053-B)
13) CPC-7 jig Part Code: J-6082-382-A
14) Power code Part Code: J-6082-223-A

    Note : Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the “ADJ” side, or press the battery switch of the battery terminal using adhesive tape, etc.
15) AFM DEV jig (J-6082-312-A)
16) Extension cable (48P, 0.8mm) (J-6082-188-A)

3-1-2. Precautions on Adjusting

1) The adjustments of this unit are performed in the VTR mode or camera mode.
   To set to the VTR mode, set the power switch to “VTR” (or “PLAYER”) or set the “Forced VTR Power ON mode” using the adjusting remote commander (Note 1).
   To set to the Camera mode, set the power switch to “CAMERA” or set the “Forced Camera Power ON mode” using the adjusting remote commander (Note 2).
   After completing adjustments, be sure to exit the “Forced VTR Power ON Mode” or “Forced Camera Power ON Mode”.
   (Note 3)
2) By setting the “Forced VTR Power ON mode” or “Forced Camera Power ON mode”, the video section can be operate even if even if the front panel block (MA-311 board, power switch, microphone unit) has been removed. When removing the front panel block disconnect the following connector.
   1. VC-195 board CN903 (23P 0.5mm)
3) The lens block (CD-181 board) need not be connected except during battery end adjustment. To remove, disconnect the following connectors.
   1. VC-195 board CN501 (16P, 0.5mm)
   2. VC-195 board CN551 (23P, 0.5mm)
4) The intelligent accessory shoe (Intelligent accessory shoe model) need not be assembled. If removing it. disconnect the following connector.
   1. VC-195 board CN909 (10P, 0.5mm)
5) Cabinet (R) (Camera function switch (CF-49board), viewfinder) need not be connected. But removing the cabinet (R) (removing the VC-195 board CN911) means removing the lithium 3V power supply (CF-49 board) , data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on the history use. (Refer to the “Service Mode” for the data on the history use.) To remove the cabinet (R), disconnect the following connector.
   1. VC-195 board CN911 (50P, 0.5mm) (COLOR EVF model)
   (30P, 0.5mm) (B/W EVF model)

Note 1: Setting the “Forced VTR Power ON” mode
(VTR mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 02, and press the PAUSE button of the adjusting remote commander.

The above procedure will enable the VTR power to be turned on with the front panel block removed.
After completing adjustments, be sure to exit the “Forced VTR Power ON mode”.

Note 2: Setting the “Forced Camera Power ON” mode
(Camera mode)
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
   The above procedure will enable the camera power to be turned on with the front panel block removed.
   After completing adjustments, be sure to exit the “Forced Camera Power ON mode”.

Note 3: Exiting the “Forced Power ON” mode
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
3) Select page: 0, address: 01, and set data: 00.

3-1-3. Adjusting Connectors

Some of the adjusting points of the video section are concentrated at VC-195 board CN910. Connect the measuring instruments via the CPC-7 jig (J-6082-382-A). The following table lists the pin numbers and signal names of CN910.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

Table 5-3-1.

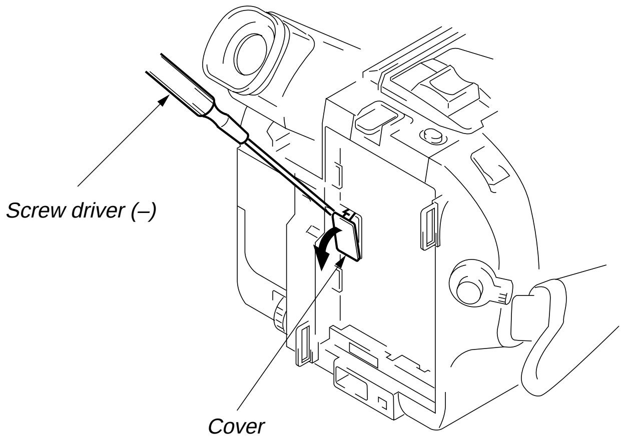
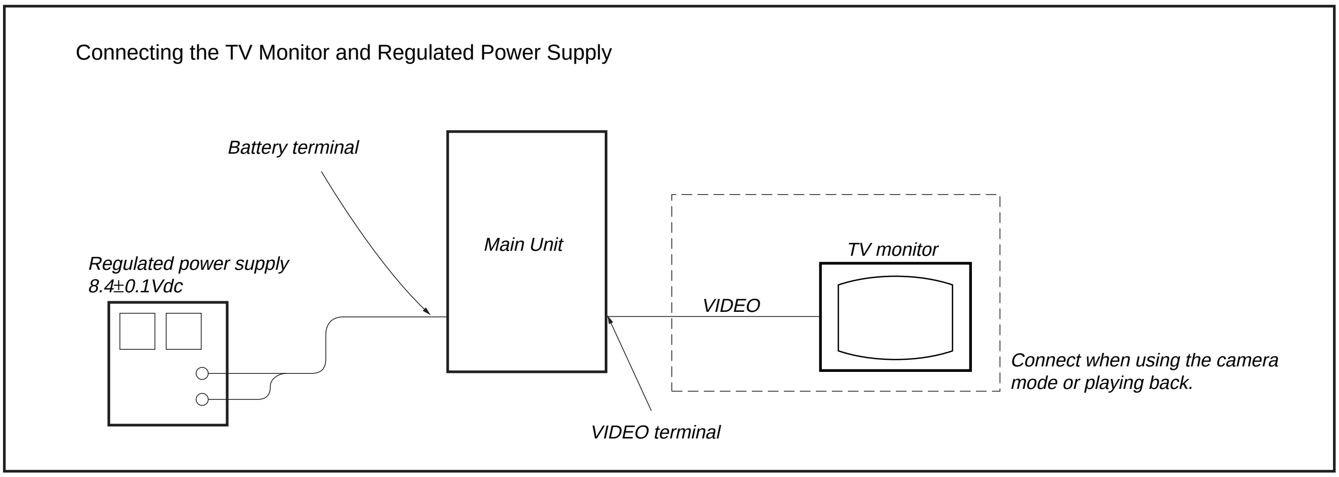


Fig. 5-3-1.

3-1-4. Connecting the Equipments

Connect the measuring instruments as shown in Fig. 5-3-2 and perform the adjustments.



Connecting the TV Monitor and Regulated Power Supply
Battery terminal
Main Unit
TV monitor
Regulated power supply
8.4±0.1Vdc
VIDEO
Connect when using the camera mode or playing back.
VIDEO terminal

Fig. 5-3-2.

3-1-5. Alignment Tape

The following table lists alignment tapes which are available.
Use the tape specified in the signal column for each adjustment.
If the type of tape to be used for checking operations is not specified, use whichever type.

Name	Record -ing mode	Tape type	Tape speed	Usage
Tracking WR5-1NP (NTSC) WR5-1CP (PAL)	Standard 8 mm	MP	SP	Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE (NTSC) WR5-7CE (PAL)	Hi8	ME	SP (NTSC) LP (PAL)	Frequency characteristics adjustment
Operation check (SP mode) WR5-5NSP (NTSC) WR5-5CSP (PAL)	Standard 8 mm	MP	SP	Checking operations
Operation check (SP mode) WR5-8NSE (NTSC) WR5-8CSE (PAL)	Hi8	ME	SP	
Operation check (LP mode) WR5-4NL (NTSC) WR5-4CL (PAL)	Standard 8 mm	MP	LP	
Operation check (LP mode) WR5-8NLE (NTSC) WR5-8CLE (PAL)	Hi8	ME	LP	
AFM stereo Operation check WR5-9NS (NTSC) WR5-9CS (PAL)	Standard 8 mm	MP	SP	AFM stereo Checking operations
BPF adjustment WR5-11NS (NTSC) WR5-11CS (PAL)	Standard 8 mm	MP	SP	BPF adjustment

Tape type
MP ..... Particle type metal tape
ME ..... Evaporated type metal tape

Table 5-3-2.

Fig. 5-3-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the VIDEO terminal (Terminated at 75 Ω).

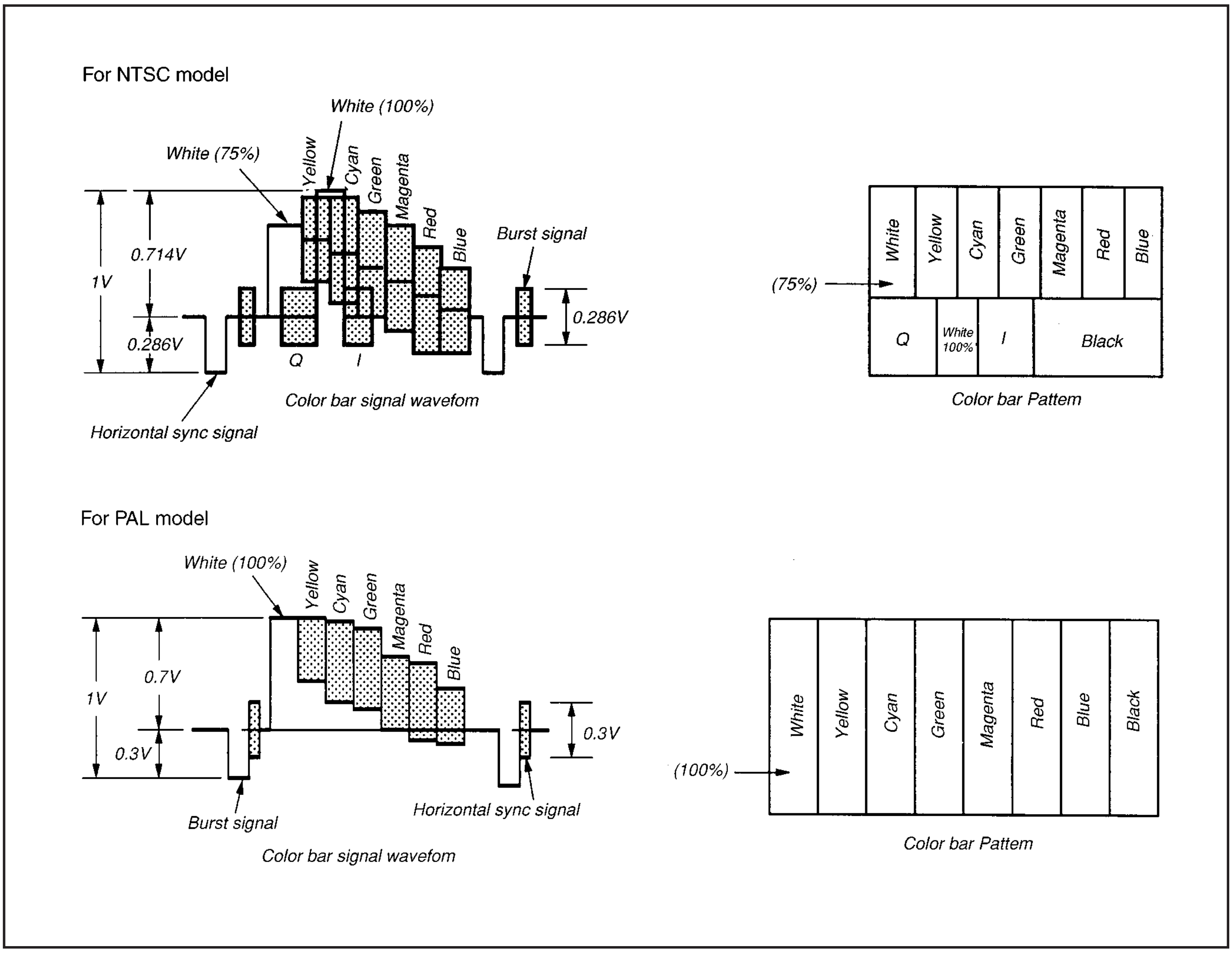

For NTSC model
White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
0.714V
1V
0.286V
0.286V
Q
I
Color bar signal wavefom
Horizontal sync signal
White
Yellow
Cyan
Green
Magenta
Red
Blue
(75%)
Q
White 100%
I
Black
Color bar Pattem
For PAL model
White (100%)
Yellow
Cyan
Green
Magenta
Red
Blue
0.7V
1V
0.3V
0.3V
Burst signal
Horizontal sync signal
Color bar signal wavefom
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black
(100%)
Color bar Pattem

Fig. 5-3-3. Color Bar Signals of the Alignment Tape

3-1-6. Input/Output Level and Impedance

Video input/output
Phono jack, 1 Vp-p, 75Ω,
unbalanced, sync negative
S video input/output (Hi8 model)
4-pin mini DIN
Luminance signal:
1Vp-p, 75Ω, unbalanced, sync negative
Chrominance signal:
0.286Vp-p 75Ω, unbalanced (NTSC)
0.3Vp-p 75Ω, unbalanced (PAL)
Audio input/output
Phono jack,
Input: –7.5 dBs, input impedance more than 47 kΩ
Output: –7.5 dBs, (at load impedance 47 kΩ), impedance less than 2.2 kΩ

3-1-7. Recording Mode (Standard 8/Hi8) switching (Hi8 model)

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/Hi8) switches automaticaly according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8

3-1-8. Service Mode

Additional note on adjustment

Note: After the completion of the all adjustments, cancell the service mode by either of the following ways.

1) Unplug the main power supply and remove the lithium battery. (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
2) After data on page: D and F is restored, select page: 0, address: 01, and return the data to 00. And when data on page: 3 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Select page: 0, address: 01, and set data: 01 before setting the data of page D and F.

Page F	Address 2A

Data	Function
00	Normal
01	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera+VTR power ON

* For page D and F, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (8.4 Vdc).

* Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergency Memory Address

Page F	Address 10 to 1B

Address	Contents
10	1st EMG code
12	Upper: MSW code when the mechanism starts shifting the 1st time Lower: MSW code when the 1st emergency occurs
13	Lower: Target MSW code of the 1st emergency occurs
14	2nd EMG code
16	Upper: MSW code when the mechanism starts shifting the 2nd time Lower: MSW code when the 2nd emergency occurs
17	Lower: Target MSW code of the 2nd emergency occurs
18	Last EMG code
1A	Upper: MSW code when the mechanism starts shifting the last time Lower: MSW code when the last emergency occurs
1B	Lower: Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (10 to 1B). When the first emergency occurs, the data corresponding to the emergency will be written in the address (10 to 13) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (14 to 17) for this second emergency.
The data corresponding to the emergency occurring the last will be written in the address (18 to 1B) for this last emergency.
Therefore the data of addresses 18 to 1B are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses 10 to 1B to 00 after repairs/adjustments.
Note 2: When rewriting the data, be sure to press the PAUSE buttton of the remote commander after setting the data.

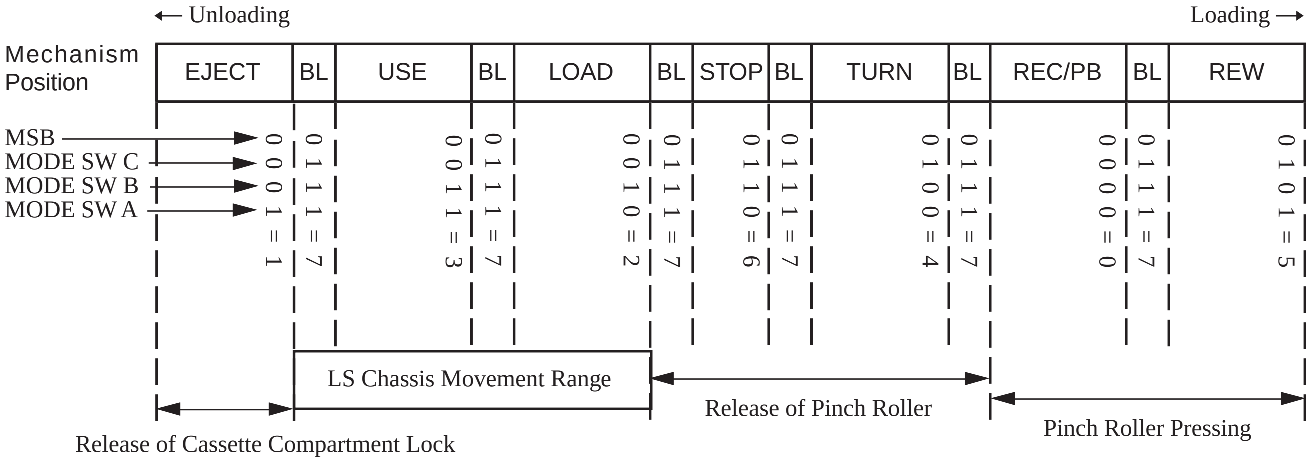
2-1. EMG CODE (Emergency Code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses 10, 14, and 18.

Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

2-2. MSW Codes

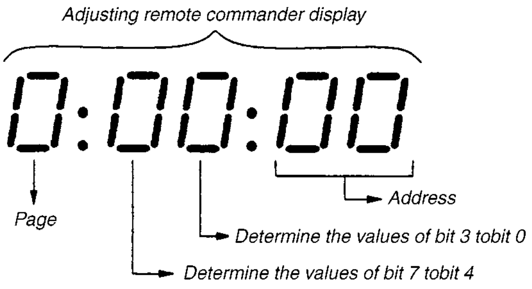
- The lower parts of the data of addresses 12, 16 and 1A represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses 12, 16 and 1A represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor).
- The lower parts of the data of addresses 13, 17 and 1B represent the MSW codes of the desired movement when the mechanism position is to be moved.


← Unloading
Loading →
Mechanism Position
EJECT
BL
USE
BL
LOAD
BL
STOP
BL
TURN
BL
REC/PB
BL
REW
MSB
MODE SW C
MODE SW B
MODE SW A
0 0 0 1 = 1
0 1 1 1 = 7
0 0 1 1 = 3
0 1 1 1 = 7
0 0 1 0 = 2
0 1 1 1 = 7
0 1 1 0 = 6
0 1 1 1 = 7
0 1 0 0 = 4
0 1 1 1 = 7
0 0 0 0 = 0
0 1 1 1 = 7
0 1 0 1 = 5
LS Chassis Movement Range
Release of Pinch Roller
Pinch Roller Pressing
Release of Cassette Compartment Lock

Mechanism Position	MSW Code	Contents
EJECT	1	Position at which the cassette compartment lock is released. The mechanism will not move any further in the unloading direction.
BL	7	BLANC code. Between two codes. The mechanism will not be stopped by this code while it is operating.
USE	3	EJECT completion position. When the cassette is ejected, the mechanism will stop at this position.
LOAD	2	Code during loading/unloading. Code that is used while the LS chassis is moving.
STOP	6	Normal stop position. The pinch roller separates, the tension regulator returns, and the brakes of both reels turn on.
TURN	4	Position at which is used when the pendulum gear swings from S to T or from T to S.
RECP/PB	0	PB, REC, CUE, REV, PAUSE, FF positions. The pinch roller is pressed and tension regulator is on.
REW	5	REW position. REW are carried at this position. The mechanism will not move any further in the loading direction.

3. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is “1” or “0”.


Adjusting remote commander display
0:00:00
Page
Address
Determine the values of bit 3 tobit 0
Determine the values of bit 7 tobit 4

Remote controller display	Bit value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A (A)	1	0	1	0
B (b)	1	0	1	1
C (c)	1	1	0	0
D (d)	1	1	0	1
Ⓑ→ E (E)	1	1	1	0
F (F)	1	1	1	1

(Example) If the remote commander display data is “8E”, bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ.

4. Switch check (1)

Page 3	Address 43

Bit	Function	When bit value=1	When bit value=0
0	VTR MODE SW	OFF	ON
1	CAM MODE SW	OFF	ON
2	START/STOP SW	OFF	ON
3	EJECT SW	OFF	ON
4	CC DOWN SW	OFF	ON
5			
6			
7			

Using method:

1) Select page: 3, address: 43.
2) By discriminating the bit value of display data, the state of the switches can be discriminated.

5. Switch check (2)

Page 3	Address 60 to 65

Using method:
1) Select page: 3, address: 60 to 65.
2) By discriminating the display data, the pressed key can be discriminated.

Address	Data							
	00 to 0D	0E to 29	2A to 46	47 to 68	69 to 90	91 to BE	BF to EA	EB to FF
60 (AD0: IC604 (93))		STOP (FK-8500 S001)	FF (FK-8500 S003)	REC (FK-8500 S005, 007)	EDIT SEARCH (+) (FK8500 S009)	EDIT SEARCH (–) (FK8500 S010)		No key input
61 (AD1: IC604 (94))	PHOTO REC (SS-8500 S004)	PAUSE (FK-8500 S002)	REW (FK-8500 S004)	PLAY (FK-8500 S006)				No key input
62 (AD2: IC604 (95))	DIGITAL EFFECT (CF-49 S001)	PICTURE EFFECT (CF-49 S006)	MENU (CF-49 S010)	EXECUTE (CF-49 S015)	TIME (CF-49 S021)	5sec REC (CF-49 S024)	PUSHING REC (CF-49 S024)	NORMAL REC (CF-49 S024)
63 (AD3: IC604 (96))	PROGRAM AE SPOT LIGHT (CF-49 S020)	PROGRAM AE PORTRAIT (CF-49 S020)	PROGRAM AE SPORTS LESSON (CF-49 S020)	PROGRAM AE BEACH & SKI (CF-49 S020)	PROGRAM AE SUNSET & MOON (CF-49 S020)	PROGRAM AE LANDSCAPE (CF-49 S020)	PROGRAM AE LOW LIGHT (CF-49 S020)	PROGRAM AE AUTO (CF-49 S020)
64 (AD4: IC604 (97))			EXPOSURE (CF-49 S012)	BACK LIGHT (CF-49 S017)	FADER (MF-8500 S002)	FOCUS INFINITY (MF-8500 S001)	FOCUS AUTO (MF-8500 S001)	FOCUS MANUAL (MF-8500 S001)
65 (AD5: IC604 (98))	DATE (CF-49 S003)	COUNTER RESET (CF-49 S008)		TITLE (CF-49 S018)				No key input

6. Headphone jack check

Page 3	Address 45

Bit	Function	When bit value=1	When bit value=0
1	Headphone jack	Headphone jack is used	

Using method:
1) Select page: 3, address: 45.
2) By discriminating the bit value of display data, the state of the headphone jack can be discriminated.

7. Input/output selection check

Page 3	Address 49

Bit	Function	When bit value=1	When bit value=0
1			
2			
3			
4	MIC jack		MIC jack is used
5	AUDIO terminal	Monaural	Stereo
6	VIDEO terminal	VIDEO terminal is used	
7	S VIDEO terminal		S VIDEO terminal is used

Using method:
1) Select page: 3, address: 49.
2) By discriminating the bit value of display data, the state of the input/output selection can be discriminated.

8. LED, LCD (display window) check

Page 3	Address 05	Bit5

Using method:

1) Select page: 3, address: 05, and set the bit value of Bit5 to “1”.
2) Check that all LED are lit and all segments of LCD (display window) are lit.
3) Select page: 3, address: 05, and set the bit value of Bit5 to “0”.

9. Record of Use Check

Page 3	Address A2 to AA

Address	Function		Remarks
A2	Drum rotation counted time (BCD code)	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
A3		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A4		Minute	
A5	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
A6		Month	
A7		Day	
A8	Final condensation occurrence date (BCD code)	Year	
A9		Month	
AA		Day	

Using method:

1) The record of use data is displayed at page 3, addresses: A2 to AA.

Note: This data will be erased when the coin lithium battery is removed (reset).

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Initialization of D, E, F Page Data

If the D, E, F page data is erased due to some reason, perform "1-2. INITIALIZATION OF D, E, F PAGE DATA", of "5-1. CAMERA SECTION ADJUSTMENT".

2. Battery End Adjustment (VC-195 board)

Set the battery end voltage.
If the voltage is incorrect, the life of the battery will shorten.
The image at the battery end will also be rough.

Mode	Camera recording
Subject	Arbitrary
Measurement Point	LCD display of the adjusting remote commander
Measuring Instrument	
Adjustment Page	D
Adjustment Address	30 to 34

Note 1: The lens block and cabinet (R) must be connected.

Switch setting
1) AUTO FOCUS .... OFF
2) NIGHT SHOT .... OFF
   (NIGHT SHOT model)

Connection:
1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 5-3-4.

Adjusting method:
1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is 6.1±0.1Vdc.
2) Turn off the power supply.
3) Turn on the HOLD switch of the adjusting remote commander.
4) Turn on the power supply.
5) Load a cassette, and set to the camera recording mode.
6) Select page: 0, address: 01, and set data: 01.
7) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is 5.30±0.01Vdc.
8) Select page: 3, address: 5D, read the data, and this data is named Dref.
9) Select page: D, address: 30, set data: Dref, and then press the PAUSE button of the adjusting remote commander.
10) Convert Dref to decimal notation, and obtain Dref '. (Refer to Table 5-1-2. "Hexadecimal-decimal conversion table")
11) Calculate D_{31}', D_{32}', D_{33}' and D_{34}' using following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.

Address: 31	$D_{31}' = Dref' + 5$
Address: 32	$D_{32}' = Dref' + 32$
Address: 33	$D_{33}' = Dref' + 53$
Address: 34	$D_{34}' = Dref' + 64$

Note 3: After setting each data, be sure to press the PAUSE button.

12) Select page: 0, address: 01, and set data: 00.

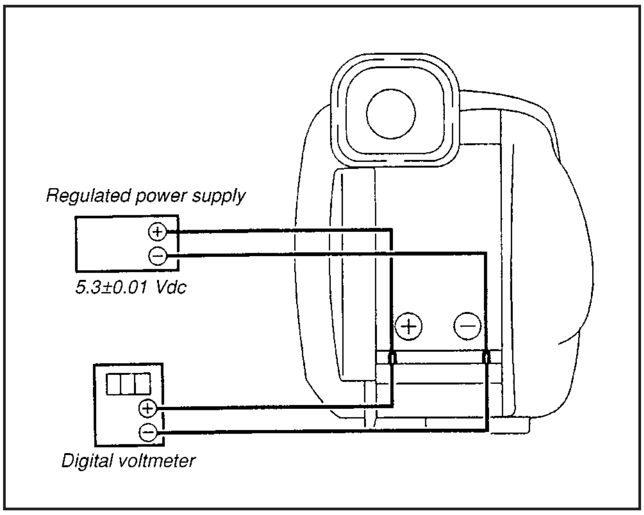


Fig. 5-3-4.

3-3. SERVO SYSTEM ADJUSTMENTS

1. CAP FG Offset Adjustment (VC-195 board)

Improve the capstan servo characteristic. If it is not correct. jitters will increase.

Mode	Camera recording (SP mode)
Subject	Arbitrary
Measurement Point	Pin ⑫ of CN910 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	69
Specified value	Duty = 50±1%

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 2, address: 01, and set data: 81, and press the PAUSE button of the adjustment remote commander. (to start up automatic CAP FG offset adjustment.)
3) Select page: 2, address: 02, and check that the data is “01”.
4) Check that Duty of CAP FG signal satisfies the specified value. If not, select page: 2, address: 01, set data: 00, and press the PAUSE button, and then, repeat steps 2) to 4).
5) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjustment remote commander.
6) Select page: 0, address: 01, and set data: 00.

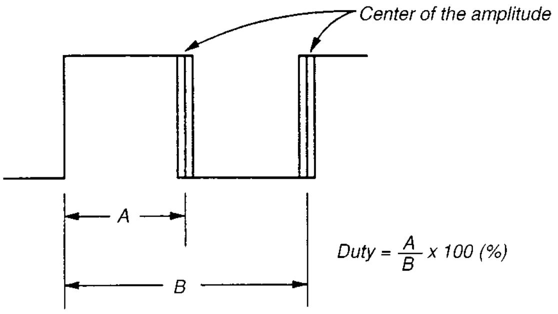


Fig. 5-3-5.

2. Switching Position Adjustment (VC-195 Board)

If deviated in this case causes switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP (NTSC)) (WR5-1CP (PAL))
Measurement Point	CH1: Pin ⑪ of CN910 (RF SWP) CH2: Pin ⑥ of CN910 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	7C, 7D
Specified Value	t1 = 0±10µsec

Note 1: NTSC MODEL: CCD-TR311
PAL MODEL: CCD-TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E/TR840E/TR845E

Adjusting Method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 2A, and set data: 20, and press the PAUSE button of the adjustment remote commander.
3) Select page: F, address: 7C, change the data and minimize “t1”, and then press the PAUSE button of the adjustment remote commander. (Coarse adjustment)
4) Select page: F, address: 7D, change the data and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
5) Press the PAUSE button of the adjustment remote commander.
6) Select page: F, address: 2A, and set data: 00, and press the PAUSE button of the adjustment remote commander.
7) Select page: 0, address: 01, and set data: 00.

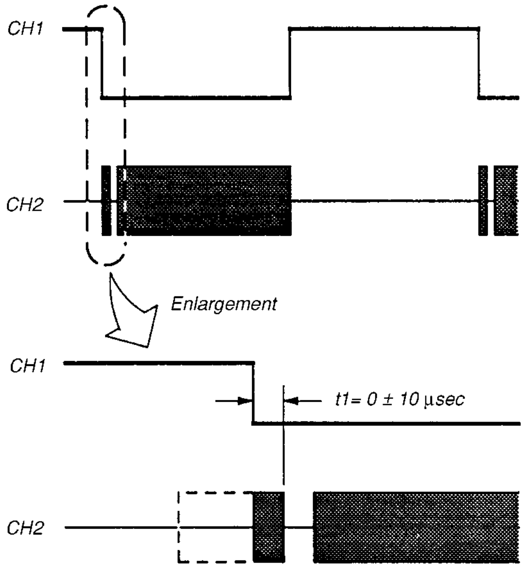


Fig. 5-3-6.

3-4. VIDEO SYSTEM ADJUSTMENTS

Video system adjustments must be performed in the following order.

[Adjusting Order]
1. 28MHz origin oscillation adjustment
2. AFC f0 adjustment
3. Filter f0 adjustment
4. Y OUT level adjustment
5. C OUT level adjustment
6. RP filter f0 adjustment
7. Hi8 REC Y current adjustment
8. Standard REC Y current adjustment
9. Hi8 REC L level adjustment
10. Standard8 REC L level adjustment
11. REC C current adjustment

1. 28 MHz Origin Oscillation Adjustment (VC-195 board)

Set the frequency of the clock for synchronization.
If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin (66) of IC202 or pin ⑫ of IC501
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	2C
Specified Value	Pin (66) of IC202 : f=3579545±17Hz (NTSC) f=4433618.75±17Hz (PAL) Pin ⑫ of IC501 : f=14318181±68Hz (NTSC) f=14187500±55Hz (PAL)

Note 1: NTSC MODEL: CCD-TR311
PAL MODEL: CCD-TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E/TR840E/TR845E

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 61, and set data: 30.
4) Select page: F, address: 2C, change the data and set the clock frequency(f) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

2. AFC f0 Adjustment (VC-195 board)

Adjust the pull-in range of the A/D converted clock generator during playback.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ④ of CN910 (AGC f0)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	4A
Specified Value	A = 2.10±0.05Vdc

Adjusting method:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 4D, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 4A, change the data and set the DC voltage (A) to the specified value.
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

3. Filter f0 Adjustment (VC-195 board)

Minimize the chroma signal residual components during composite video signal input.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ③ of CN910 (IR VIDEO)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4D
Specified Value	Minimum residual chroma signal components (A=Bellow 12mV)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 4F, and press the PAUSE button of the adjusting remote commander.
3) Select page: F, address: 4D, change the data and minimize the residual chroma signal components (A).
4) Press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

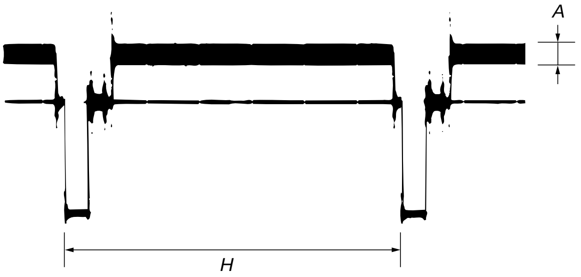


Fig. 5-3-7.

4. Y OUT Level Adjustment (VC-195 board)

Set the Y signal output level.

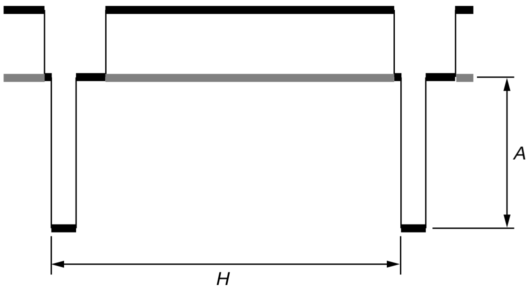
Mode	VTR stop
Signal	No signal
Measurement Point	Hi8 model : Y signal terminal of S VIDEO terminal (75Ω terminated) Standard 8 model : VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	49
Specified Value	A = 286±5mV (NTSC) A = 300±5mV (PAL)

Note 1: Insert the plug into the S video terminal (Hi8 model)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 61, and set data: 30.
4) Select page: F, address: 49, change the data and set the SYNC level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

Hi8 model



Standard 8 model

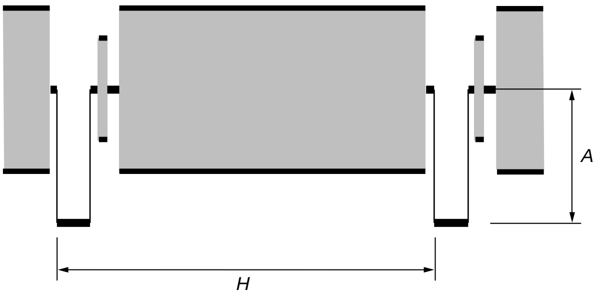


Fig. 5-3-8.

5. C OUT Level Adjustment (VC-195 board)

Set the chroma signal output level.

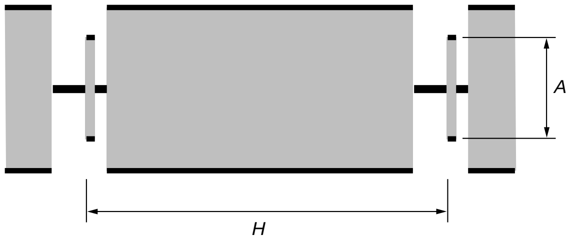
Mode	VTR stop
Signal	No signal
Measurement Point	Hi8 model : Chroma signal terminal of S VIDEO terminal (75Ω terminated) Standard 8 model : VIDEO terminal (75Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4B
Specified Value	A = 286±5mV (NTSC) A = 300±5mV (PAL)

Note 1: Insert the plug into the S video terminal (Hi8 model)

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
3) Select page: 2, address: 61, and set data: 30.
4) Select page: F, address: 4B, change the data and set the burst level (A) to the specified value.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 2, address: 61, and set data: 10.
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

Hi8 model



Standard 8 model

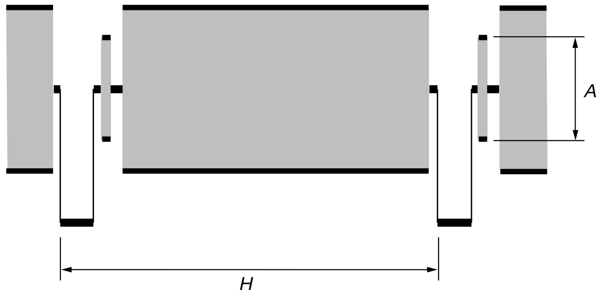


Fig. 5-3-9.

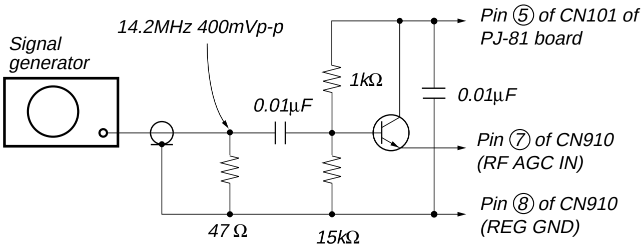
6. RP Filter f0 Adjustment (VC-195 board)

Adjust the LPF of the playback RF amplifier.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑨ of CN910 (RF AGC OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4E
Specified Value	A = Below 10mVp-p

Connection:

1) Input a 14.2MHz, 400mVp-p CW signal to Pin ⑦ of CN910 (RF AGC IN).



Transistor : General NPN transistor (2SC403. etc)

47 Ω resistor :	*1-249-401-11*
1k Ω resistor :	*1-249-417-11*
15k Ω resistor :	*1-249-431-11*
0.01µF capacitor :	*1-101-004-00*

Fig. 5-3-10.

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: 3, address: 01, set data: 35, and press the PAUSE button of the adjusting remote commander.
3) Only for Standard8 model, select page: D, address: 15, after memorizing the data , set the bit value of bit0 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service Mode”).
4) Select page: F, address: 4E, change the data and minimize the 14.2 MHz signal level (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: D, address: 15, and set the data memorized at step 3), and press the PAUSE button of the adjusting remote commander..
7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
8) Select page: 0, address: 01, and set data: 00.

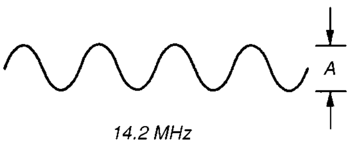


Fig. 5-3-11.

7. Hi8 REC Y Current Adjustment (VC-195 board) (CCD-TR840E/TR845E)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	53 to 5A
Specified Value	A = 185±5mV

Preparations only for the model without REC switch:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service Mode”).
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-105 board and GND with 4.7kΩ resistor for a second.)
   4.7kΩ resistor : 1-249-425-11

Adjusting method:

1) Insert a tape, set to recording mode.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 5C, after note down the data , set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 65, after note down the data , set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
6) Select page: F, address: 54, change the data and set the Y signal level (A) to the specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Select page: F, address: 54, and read the data (D_{54}).
9) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)
   Address: 53 $D_{53} = D_{54}$
   Address: 55 $D_{55} = D_{54}$
   Address: 56 $D_{56} = D_{54}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

10) Write the following data in page: F, address: 57 to 5A.

Address	Data
57	A1
58	95
59	A1
5A	95

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

11) Select page: F, address: 5C, set the data noted down at step 3), press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 65, set the data noted down at step 4), press the PAUSE button of the adjusting remote commander.
13) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
14) Select page: 0, address: 01, and set data: 00.

Processing after completed adjustment: only for the model without REC switch:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 2) of “Preparations only for the model without REC switch”.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 3) of “Preparations only for the model without REC switch”.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

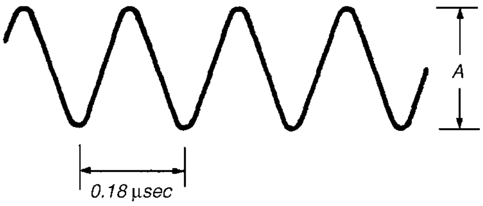


Fig. 5-3-12.

8. Standard8 REC Y Current Adjustment (VC-195 board) (CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E)

Adjust the Y FM signal recording current.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	53 to 5A
Specified Value	A = 170±5mV (NTSC) A = 185±5mV (PAL)

Note 1: NTSC MODEL: CCD-TR311
PAL MODEL: CCD-TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E

Preparations only for the model without REC switch:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service Mode”).
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-105 board and GND with 4.7kΩ resistor for a second.)
   4.7kΩ resistor : 1-249-425-11

Adjusting method:
1) Insert a tape, set to recording mode.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 5C, after note down the data , set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 65, after note down the data , set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
6) Select page: F, address: 54, change the data and set the Y signal level (A) to the specified value.
7) Press the PAUSE button of the adjusting remote commander.
8) Select page: F, address: 54, and read the data (D_{54}).
9) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)
   Address: 53 $D_{53} = D_{54}$
   Address: 55 $D_{55} = D_{54}$
   Address: 56 $D_{56} = D_{54}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

10) Write the following data in page: F, address: 57 to 5A.

Address	Data	
	NTSC	PAL
57	80	80
58	80	80
59	80	80
5A	80	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

11) Select page: F, address: 5C, set the data noted down at step 3), press the PAUSE button of the adjusting remote commander.
12) Select page: F, address: 65, set the data noted down at step 4), press the PAUSE button of the adjusting remote commander.
13) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
14) Select page: 0, address: 01, and set data: 00.

Processing after completed adjustment: only for the model without REC switch:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 2) of “Preparations only for the model without REC switch”.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 3) of “Preparations only for the model without REC switch”.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

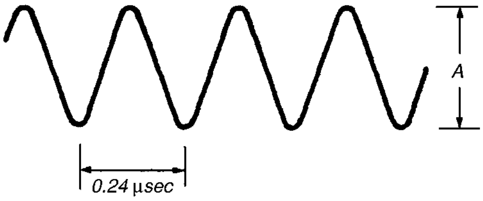


Fig. 5-3-13.

9. Hi8 REC L Level Adjustment (VC-195 board) (CCD-TR840E/TR845E)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorated, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	5B to 64
Specified Value	A = 11.0±0.7mV

Note 1: Do not insert a plug into the AUDIO (R) terminal.

Connection:
1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing “REC L Level Adjustment” and “REC C Current Adjustment”, replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

Preparations only for the model without REC switch:
1) Insert Hi8 ME tape.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service Mode”).
4) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
5) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-105 board and GND with 4.7kΩ resistor for a second.)
   4.7kΩ resistor : 1-249-425-11

Adjusting method:
1) Insert Hi8 ME tape, set to recording mode.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 5B, set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 65, set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: F, address: 5C, change the data and set the REC AFM signal level (A) to the specified value.
6) Press the PAUSE button of the adjusting remote commander.
7) Select page: F, address: 5C, read the data (D_{5C}).
8) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)
   Address: 5B $D_{5B} = D_{5C}$
   Address: 5D $D_{5D} = D_{5C}$
   Address: 5E $D_{5E} = D_{5C}$
   Address: 5F $D_{5F} = D_{5C} + 12$
   Address: 60 $D_{60} = D_{5C} + 12$
   Address: 61 $D_{61} = D_{5C} + 12$
   Address: 62 $D_{62} = D_{5C} + 12$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

9) Write the following data in page: F, address: 63 to 64.

Address	Data
63	7A
64	7A

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

10) Select page: 0, address: 01, and set data: 00.
11) Perform “REC C Current Adjustment”.

Processing after completed adjustment: only for the model without REC switch:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 3) of “Preparations only for the model without REC switch”.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 4) of “Preparations only for the model without REC switch”.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

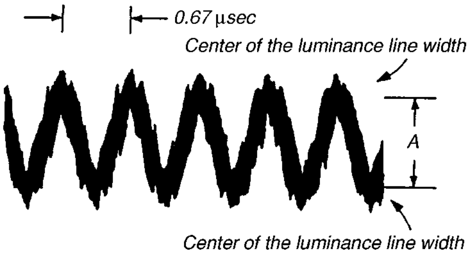

0.67 µsec
Center of the luminance line width
A
Center of the luminance line width

Fig. 5-3-14.

10. Standard8 REC L Level Adjustment (VC-195 board) (CCD-TR311/TR311E/TR411E/TR412E/TR511E/ TR512E/TR640E/TR730E)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorated, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	5B to 64
Specified Value	A = 9.6±0.6mV (NTSC) A = 9.3±0.5mV (PAL)

Note 1: NTSC MODEL: CCD-TR311
PAL MODEL: CCD-TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E

Note 2: Do not insert a plug into the AUDIO (R) terminal.

Connection:

1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing “REC L Level Adjustment” and “REC C Current Adjustment”, replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

Preparations only for the model without REC switch:

1) Insert Standard8 MP tape.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service Mode”).
4) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
5) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-105 board and GND with 4.7kΩ resistor for a second.)
   4.7kΩ resistor : 1-249-425-11

Adjusting method:

1) Insert Standard8 MP tape, set to recording mode.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: F, address: 5B, set data: FF, and press the PAUSE button of the adjusting remote commander.
4) Select page: F, address: 65, set data: 00, and press the PAUSE button of the adjusting remote commander.
5) Select page: F, address: 5C, change the data and set the REC AFM signal level (A) to the specified value.
6) Press the PAUSE button of the adjusting remote commander.
7) Select page: F, address: 5C, read the data (D_{5C}).
8) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)
   Address: 5B $D_{5B} = D_{5C}$
   Address: 5D $D_{5D} = D_{5C}$
   Address: 5E $D_{5E} = D_{5C}$
   Address: 5F $D_{5F} = D_{5C}$
   Address: 60 $D_{60} = D_{5C}$
   Address: 61 $D_{61} = D_{5C}$
   Address: 62 $D_{62} = D_{5C}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

9) Write the following data in page: F, address: 63 to 64.

Address	Data	
	NTSC	PAL
63	80	80
64	80	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

10) Select page: 0, address: 01, and set data: 00.
11) Perform “REC C Current Adjustment”.

Processing after completed adjustment: only for the model without REC switch:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 3) of “Preparations only for the model without REC switch”.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 4) of “Preparations only for the model without REC switch”.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

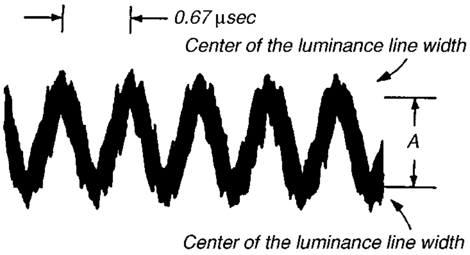


Fig. 5-3-15.

11. REC C Current Adjustment (VC-195 board)

Set the recording current levels of the REC Chroma signal. If it is too low, chroma signal noise in played back picture will increased. If too high, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	65
Specified Value	Hi8 model : A = 35.7±1.3mV (PAL) Standard8 model : A = 30.9±1.1mV (NTSC) A = 30.0±1.1mV (PAL)

Note 1: PAL Hi8 model: CCD-TR840E/TR845E
NTSC Standard8 model: CCD-TR311
PAL Standard8 model: CCD-TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E

Connection:
1) Remove C085 (0.01µF, Pin ⑯ of IC202).

Note: After completing “REC L Level Adjustment” and “REC C Current Adjustment”, replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01µF 10% 25V).

2) Connect Pin ① of IC001 and GND with a 0.01F capacitor.
0.01µF capacitor: 1-101-004-00

Preparations only for the model without REC switch:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service Mode”).
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-105 board and GND with 4.7kΩ resistor for a second.)
4.7kΩ resistor : 1-249-425-11

Adjusting method:
1) Insert a tape, set to recording mode.
2) Select page: 0, address: 01, and set data: 01.
3) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
4) Select page: 2, address: 61, and set data: 30.
5) Select page: F, address: 65, change the data and set the REC chroma signal level (A) to the specified value.
6) Press the PAUSE button of the adjusting remote commander.
7) Select page: 2, address: 61, and set data: 10.
8) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
9) Select page: 0, address: 01, and set data: 00.

Processing after completed adjustment: only for the model without REC switch:
1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 2) of “Preparations only for the model without REC switch”.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 3) of “Preparations only for the model without REC switch”.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

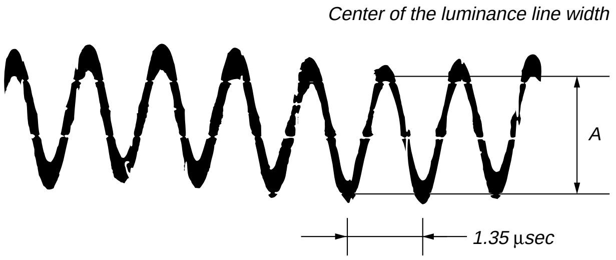


Fig. 5-3-16.

3-5. STEREO AUDIO SYSTEM ADJUSTMENT (CCD-TR730E/TR840E/TR845E)

- Perform the adjustment using the color bar signal as a video signal input for VIDEO terminal.
- The items to be adjusted for the R channel will be indicated within the [ ], in regard to the adjusting items to be adjusted for both L and R channels.
- Set the Hi-Fi sound switch in the menu display to “STEREO” position unless specified otherwise.

Note:

1) When inputting the audio signal, input the same signal to both the L and R channels, unless specified otherwise.
2) Be sure to insert the plug (Shorting plug or dummy plug, etc) into the AUDIO terminal (Right). If the plug is not inserted, the monaural mode well be set, and correct adjustments can not be carried out.
   [Monaural mode]
   During recording .... REC AFM RF 1.7MHz carriear will not be output.
   During playback .... The L+R signal will be output from the AUDIO terminal (Left).

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 5-3-17, and perform adjustments at the power switch [VTR] or [PLAYER] position.

[Adjustment Procedure]

1) 1.5 MHz deviation adjustment
2) 1.7 MHz deviation adjustment
3) BPF adjustment

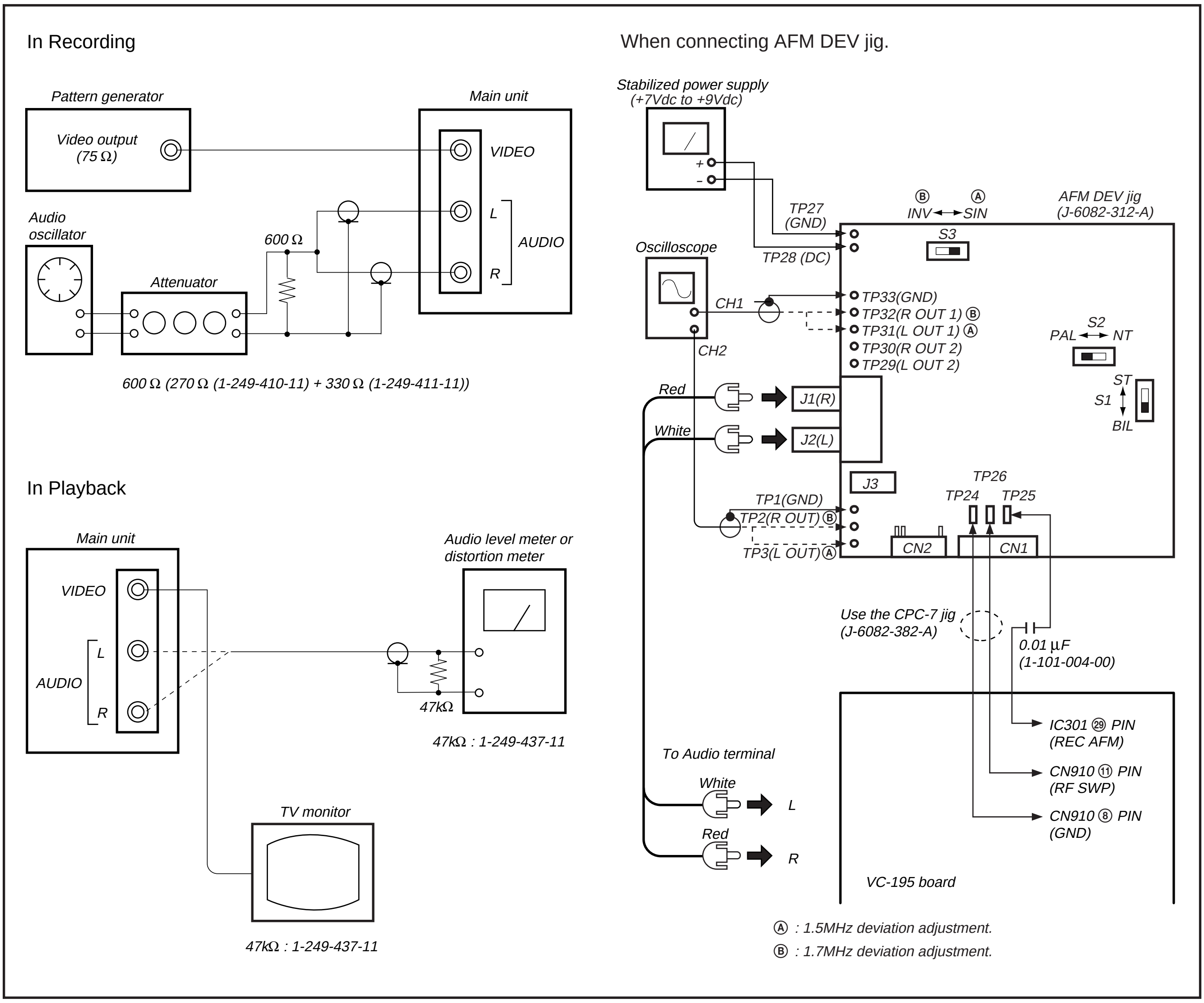

In Recording
Pattern generator
Video output (75 Ω)
Main unit
VIDEO
L
AUDIO
R
Audio oscillator
Attenuator
600 Ω
600 Ω (270 Ω (1-249-410-11) + 330 Ω (1-249-411-11))
In Playback
Main unit
VIDEO
L
AUDIO
R
Audio level meter or distortion meter
47kΩ
47kΩ : 1-249-437-11
TV monitor
47kΩ : 1-249-437-11
When connecting AFM DEV jig.
Stabilized power supply (+7Vdc to +9Vdc)
+
–
TP27 (GND)
TP28 (DC)
Ⓑ INV ◄► SIN Ⓐ
S3
AFM DEV jig (J-6082-312-A)
Oscilloscope
CH1
CH2
TP33(GND)
TP32(R OUT 1) Ⓑ
TP31(L OUT 1) Ⓐ
TP30(R OUT 2)
TP29(L OUT 2)
S2
PAL ◄► NT
ST
S1
BIL
Red
J1(R)
White
J2(L)
J3
TP26
TP24
TP25
TP1(GND)
TP2(R OUT) Ⓑ
TP3(L OUT) Ⓐ
CN2
CN1
Use the CPC-7 jig (J-6082-382-A)
0.01 μF (1-101-004-00)
IC301 ㉙ PIN (REC AFM)
CN910 ⑪ PIN (RF SWP)
CN910 ⑧ PIN (GND)
To Audio terminal
White
L
Red
R
VC-195 board
Ⓐ : 1.5MHz deviation adjustment.
Ⓑ : 1.7MHz deviation adjustment.

Fig. 5-3-17.

1. 1.5 MHz Deviation Adjustment (VC-195 board)

Sets the spectrum of the L-ch ((L+R)/2 signal) level modulated during recording. If deviated, the crosstalk signal of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the left and right audio input terminal
Measurement Point	CH1: AFM DEV jig TP31 CH2: AFM DEV jig TP3
Measuring Instrument	Oscilloscope ADD mode CH2 INV mode
Adjustment Page	F
Adjustment Address	45
Specified Value	The level difference between CH1 signal and CH2 signal should be minimum.

Connection:

1) Connect TP24 and TP26 of the AFM DEV jig to CN910 of the VC-195 board.
   TP24(GND) .... Pin ⑧ of CN910
   TP26(RF SWP) .... Pin ⑪ of CN910
2) Connect TP25 (REC AFM) of the AFM DEV jig to Pin ㉙ of IC301 with a 0.01μF capacitor (1-101-004-00).
3) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
4) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7Vdc to +9Vdc).
5) Set the AFM DEV jig switches to the following positions.
   S1 .... BIL Position
   S2 .... PAL Position
   S3 .... SIN Position

Preparations only for the model without REC switch:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service Mode”).
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-105 board and GND with 4.7kΩ resistor for a second.)
   4.7kΩ resistor : 1-249-425-11

Adjusting method :

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the INV (invert) mode.
3) Select page: 0, address: 01, and set data: 01.
4) Select page: F, address: 45, change the data and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

Processing after completed adjustment: only for the model without REC switch:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 2) of “Preparations only for the model without REC switch”.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 3) of “Preparations only for the model without REC switch”.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

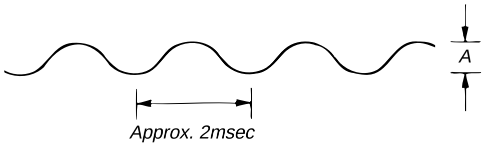


Fig. 5-3-18.

2. 1.7 MHz Deviation Adjustment (VC-195 board)

Sets the spectrum of the R-ch ((L-R)/2 signal) level modulated during recording. If deviated, the crosstalk signal of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the left and right audio input terminal
Measurement Point	CH1: AFM DEV jig TP32 CH2: AFM DEV jig TP2
Measuring Instrument	Oscilloscope ADD mode CH2 normal mode
Adjustment Page	F
Adjustment Address	46
Specified Value	The level difference between CH1 signal and CH2 signal should be minimum.

Connection:

1) Connect TP24 and TP26 of the AFM DEV jig to CN910 of the VC-195 board.
   TP24 (GND) .... Pin ⑧ of CN910
   TP26 (RF SWP) .... Pin ⑪ of CN910
2) Connect TP25 (REC AFM) of the AFM DEV jig to Pin ㉙ of IC301 with a 0.01µF capacitor (1-101-004-00).
3) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
4) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7Vdc to +9Vdc).
5) Set the AFM DEV jig switches to the following positions.
   S1 .... BIL Position
   S2 .... PAL Position
   S3 .... INV Position

Preparations only for the model without REC switch:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service Mode”).
3) Select page: D, address: 15, after memorizing the data , set the bit value of bit7 to “0”.
4) Set to recording mode. (Use the wireless remote commander of 8mm VCR, or connect Pin ⑥ of CN935 of DD-105 board and GND with 4.7kΩ resistor for a second.)
   4.7kΩ resistor : 1-249-425-11

Adjusting method :

1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
2) Set the oscilloscope to the ADD mode and CH2 to the normal mode.
3) Select page: 0, address: 01, and set data: 01.
4) Select page: F, address: 46, change the data and minimize the audio signal level difference (A).
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

Processing after completed adjustment: only for the model without REC switch:

1) Select page: 0, address: 01, and set data: 01.
2) Select page: D, address: 14, and set the data memorized at step 2) of “Preparations only for the model without REC switch”.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: D, address: 15, and set the data memorized at step 3) of “Preparations only for the model without REC switch”.
5) Press the PAUSE button of the adjusting remote commander.
6) Select page: 0, address: 01, and set data: 00.

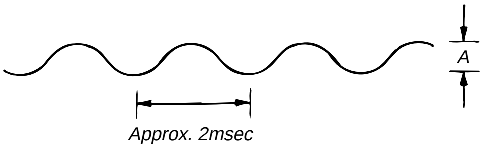


Fig. 5-3-19.

3. BPF f0 Adjustment (VC-195 board)

Sets the BPF passing frequency so that the AFM signal can separate from the playback RF signal properly. If deviated. the mono/stereo mode will be differentiated incorrectly, and noises and distortions will increase during high volume playback.

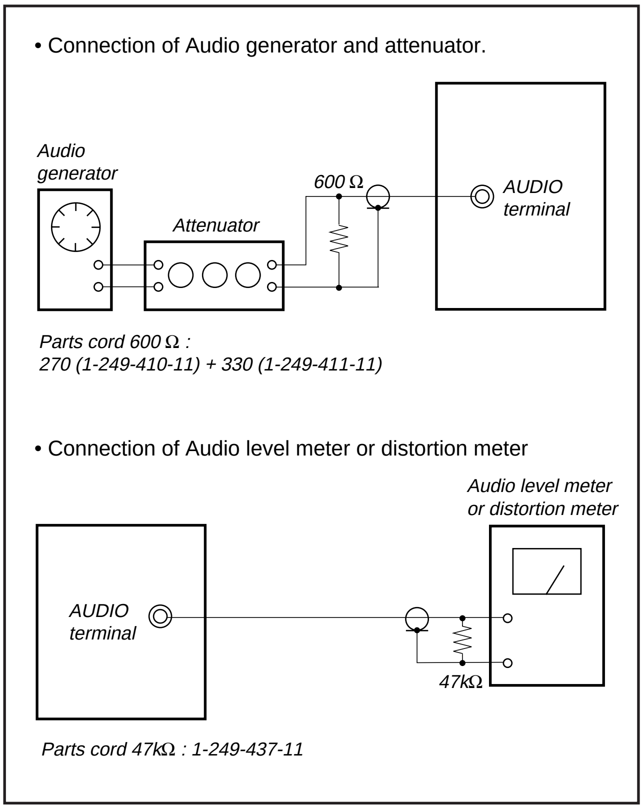
Mode	Playback
Signal	Alignment tape: For BPF adjustment (WR5-11CS)
Measurement Point	Audio output terminal left or right
Measuring Instrument	distortion meter
Adjustment Page	F
Adjustment Address	47
Specified Value	The Main and Sub channel distortion rate should be almost the same (within±1%) and minimum.

Adjusting method :

1) Select page: 0, address: 01, and set data: 01.
2) Set the Hi-Fi sound switch (menu display) to “2”.
3) Select page: F, address: 47, change the data and minimize the distortion rate.
4) Press the PAUSE button of the adjusting remote commander.
5) Set the Hi-Fi sound switch (menu display) to “1”.
6) Select page: F, address: 47, change the data and minimize the distortion rate.
7) Press the PAUSE button of the adjusting remote commander.
8) Repeat steps 2) to 7) and set the data of address: 47 so that the distortions rates when the Hi-Fi sound switch is set to “2” and set to “1” respectively are almost the same and minimum.
9) Press the PAUSE button of the adjusting remote commander.
11) Select page: 0, address: 01, and set data: 00.
12) Set the Hi-Fi sound switch to “STEREO”.

3-6. MONAURAL AUDIO SYSTEM ADJUSTMENT MONAURAL (CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E)

[Connecting the measuring instruments for the audio]
Connect the audio system measuring instruments besides the video system measuring instruments as shown Fig. 5-3-20.



• Connection of Audio generator and attenuator.

Parts cord 600 Ω :
270 (1-249-410-11) + 330 (1-249-411-11)

• Connection of Audio level meter or distortion meter

Parts cord 47kΩ : 1-249-437-11

Fig. 5-3-20.

1. 1.5 MHz Deviation Adjustment (VC-195 board)

Adjust to the optimum audio FM signal distortion.
If the adjustment is not correct, its playback level will differ from that of other units.

Mode	Playback
Signal	Alignment tape: For checking the operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL))
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	45
Specified Value	–7.5±0.5dBs

Note 1: NTSC model: CCD-TR311
PAL model: CCD-TR311E/TR411E/TR412E/TR511E/TR512E/TR640E

Adjusting method :

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 45, change the data and set the 400Hz signal level to the specified value.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.

2. BPF Adjustment (VC-195 board)

Adjust to the optimum audio BPF characteristics of the IC.
If the adjustment is not correct, the distortion rate and S/N ratio will worsen.

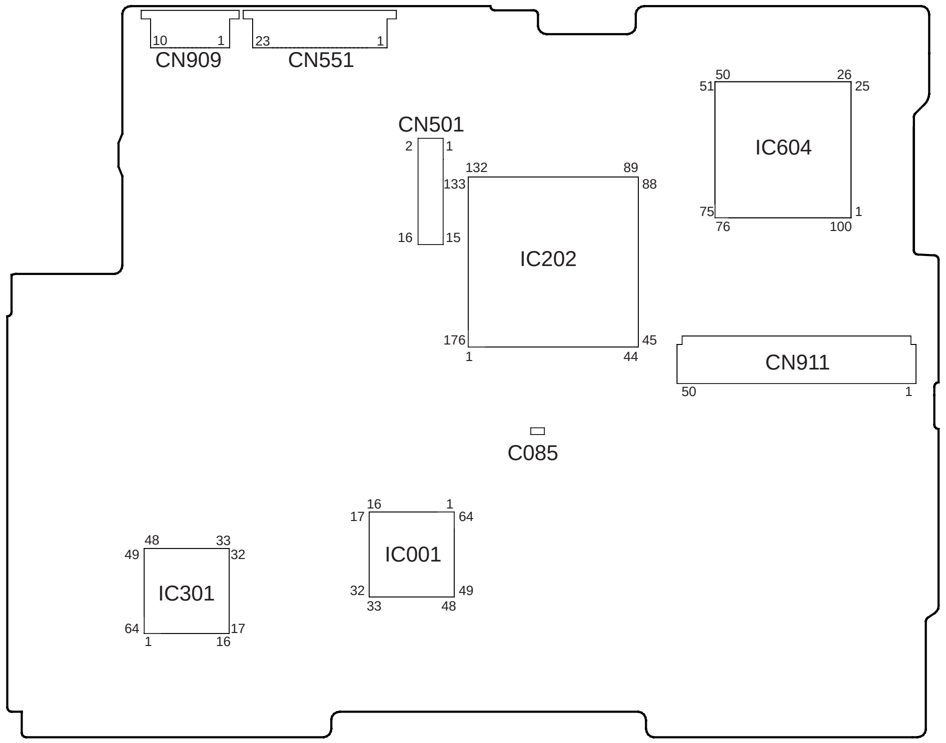
Mode	Playback
Signal	Alignment tape: For BPF adjustment (WR5-11NS (NTSC)) (WR5-11CS (PAL))
Measurement Point	Audio output terminal
Measuring Instrument	distortion meter
Adjustment Page	F
Adjustment Address	47
Specified Value	The distortion rate should be and minimum.

Adjusting method :

1) Select page: 0, address: 01, and set data: 01.
2) Select page: F, address: 47, change the data and minimize the distortion rate.
3) Press the PAUSE button of the adjusting remote commander.
4) Select page: 0, address: 01, and set data: 00.

3-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

VC-195 BOARD (SIDE A)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1
CN551
23
1
CN501
2
1
16
15
IC604
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26
51
25
75
1
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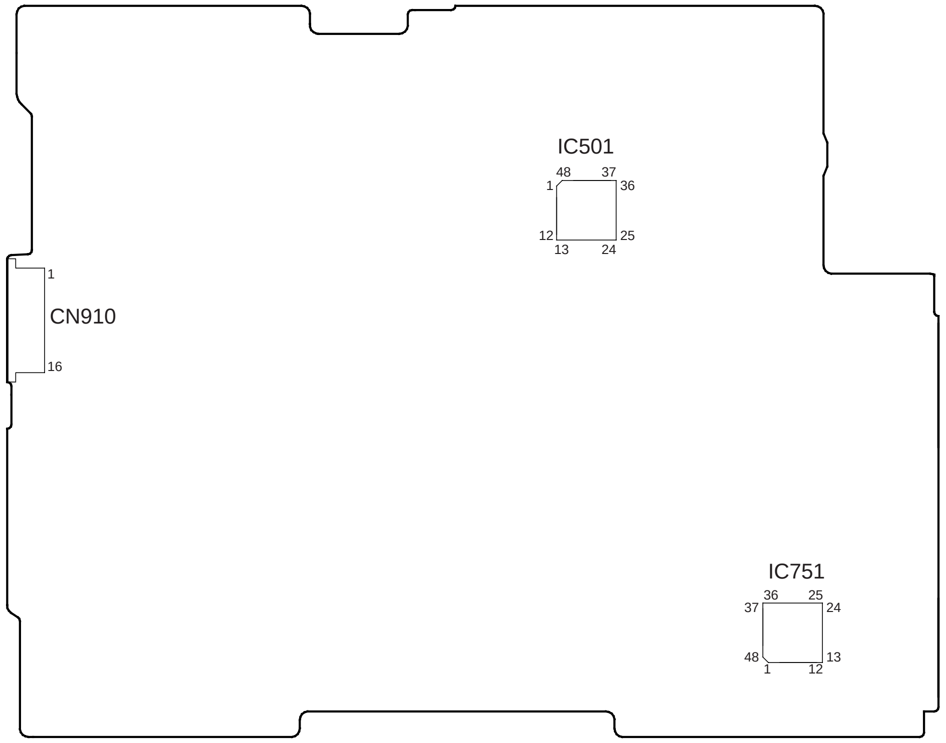
IC202
132
89
133
88
176
1
44
45
CN911
50
1
C085
IC001
16
1
17
64
32
49
33
48
IC301
48
33
49
32
64
17
1
16

VC-195 BOARD (SIDE B)


IC501
48
37
1
36
12
25
13
24
CN910
1
16
IC751
36
25
37
24
48
13
1
12

SECTION 6
REPAIR PARTS LIST

6-1. EXPLODED VIEWS

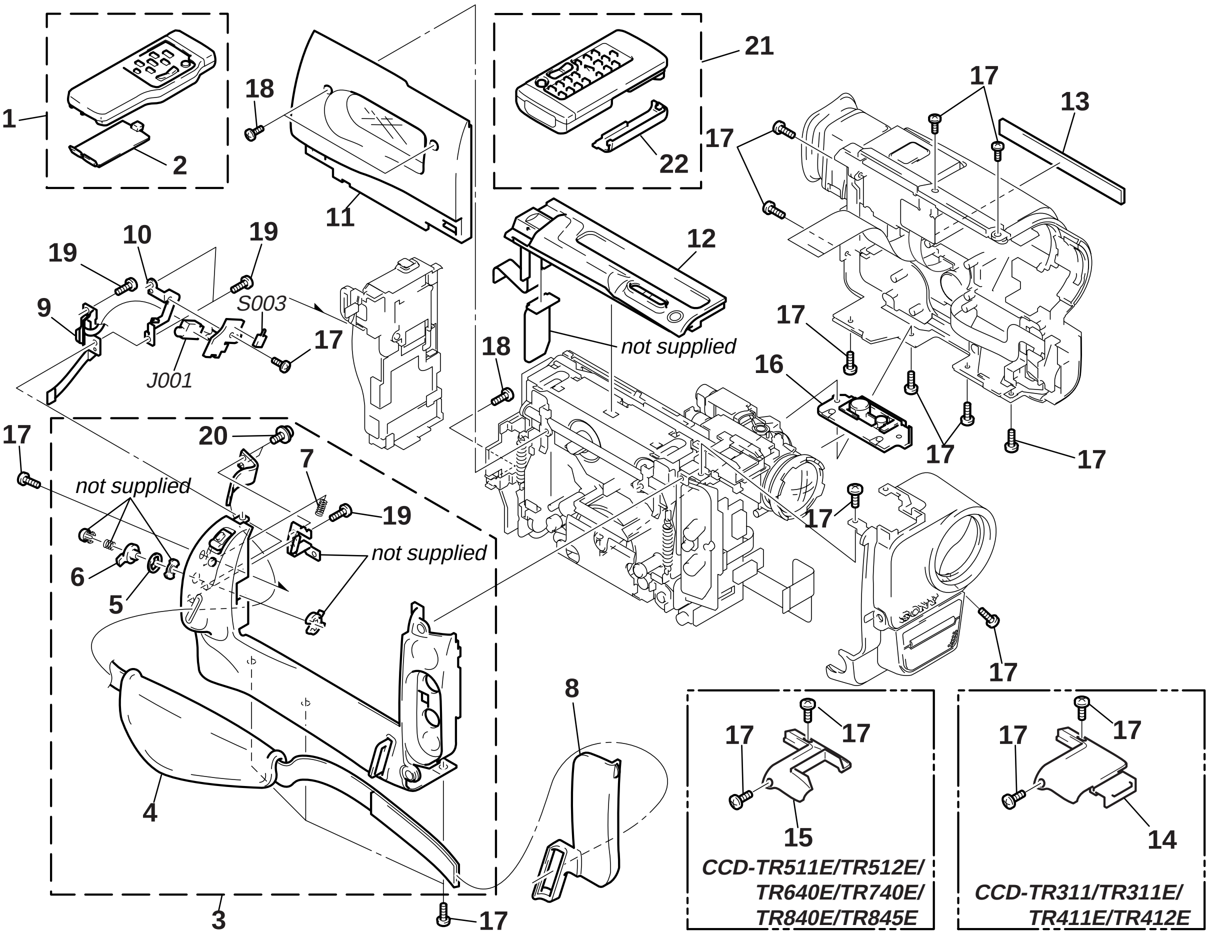
NOTE:
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

- Abbreviation

EE : East European Model
NE : North European Model
RU : Russian Model
HK : Hong Kong Model
AUS : Australian Model
CN : Chinese Model

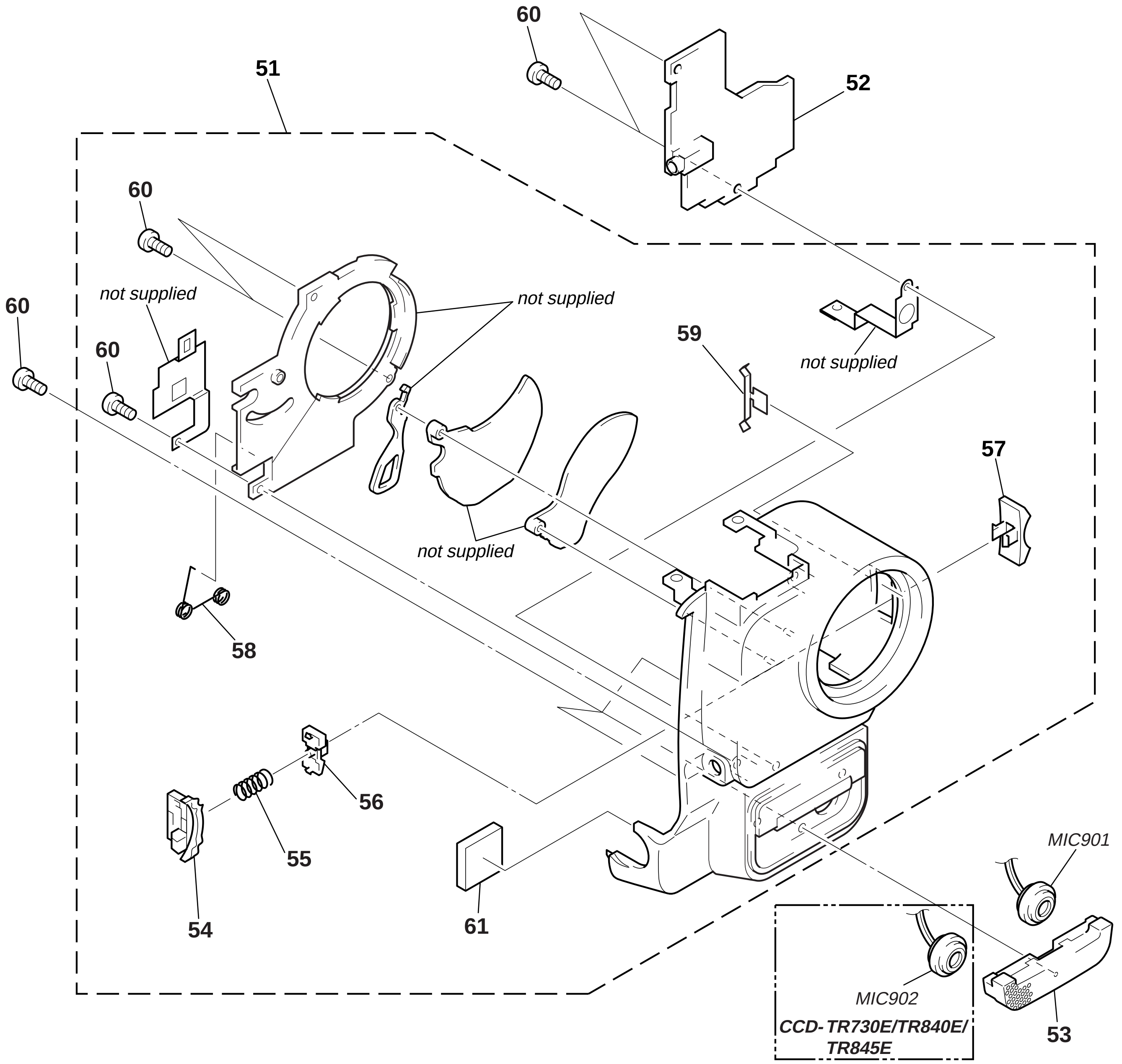
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

6-1-1. CABINET (L) BLOCK ASSEMBLY



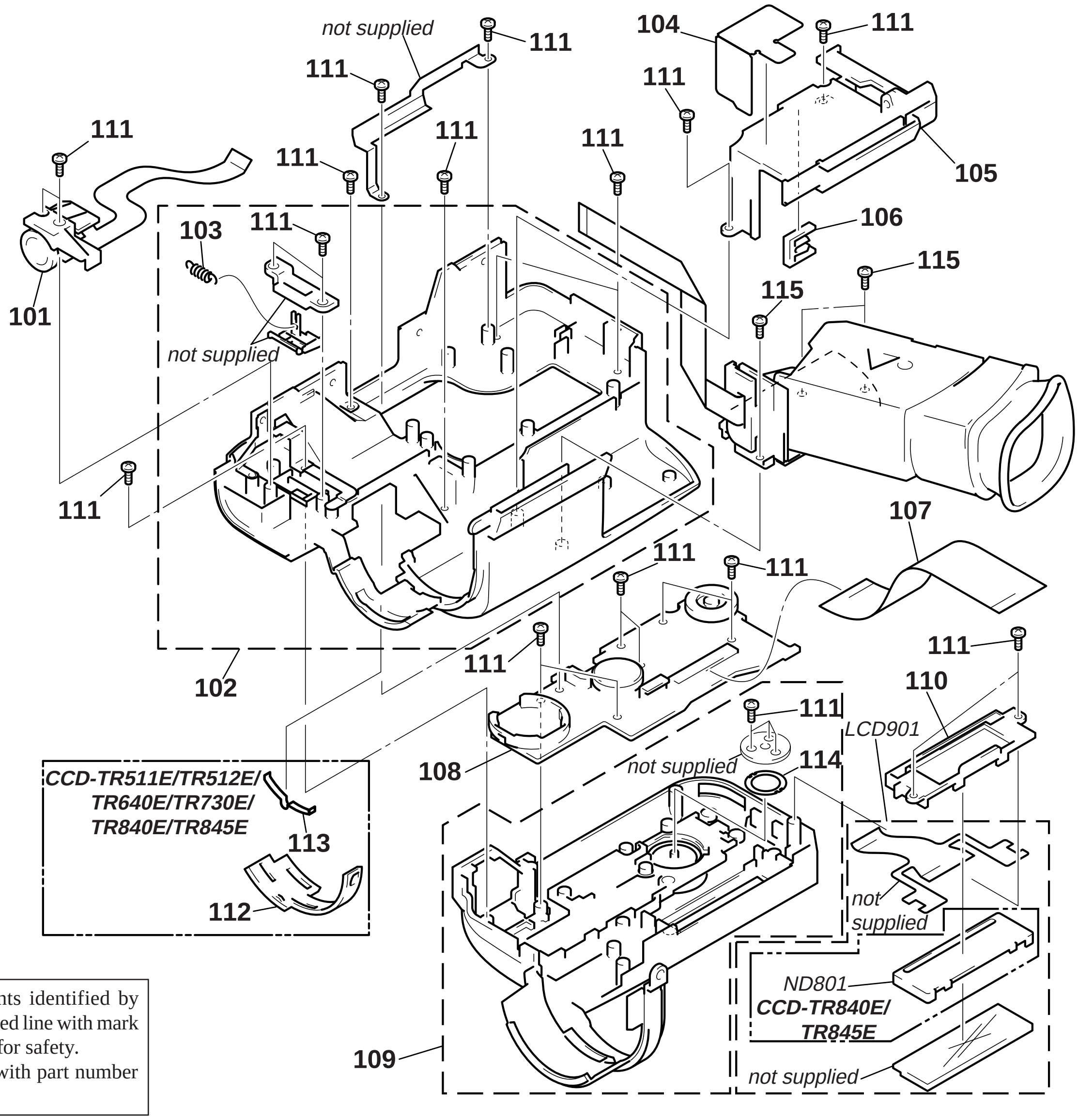
Ref. No.	Part No.	Description	Remark
1	1-467-574-21	REMOTE COMMANDER (RMT-708) (EXCEPT TR311/TR311E/TR411E/TR845E)	
2	3-958-131-01	LID-BATTERY CASE (FOR RMT-708) (EXCEPT TR311/TR311E/TR411E/TR845E)	
3	X-3948-205-1	CABINET (L) ASSY (TR840E/TR845E)	
3	X-3948-208-1	CABINET (L) ASSY (EXCEPT TR730E/TR840E/TR845E)	
3	X-3948-213-1	CABINET (L) ASSY (TR730E)	
4	3-969-339-31	BELT, GRIP	
5	3-970-854-01	SPRING, STAND-BY	
6	3-969-081-01	KNOB, STAND-BY	
7	3-302-492-00	SPRING, COMPRESSION	
8	3-975-522-01	COVER, JACK	
9	1-475-619-11	SWITCH BLOCK, CONTROL (SS-8500) (EXCEPT TR730E)	
9	1-475-619-21	SWITCH BLOCK, CONTROL (SS-8500) (TR730E)	
* 10	3-975-532-01	HOLDER, EL	
11	X-3948-222-1	LID ASSY, CASSETTE (TR840E/TR845E)	
11	X-3948-223-1	LID ASSY, CASSETTE (EXCEPT TR840E/TR845E)	
12	1-475-617-11	SWITCH BLOCK, CONTROL (FK8500) (TR311/TR311E/TR411E/TR412E)	
12	1-475-617-31	SWITCH BLOCK, CONTROL (FK-8500) (EXCEPT TR311/TR311E/TR411E/TR412E/TR840E:AUS)	
12	1-475-617-61	SWITCH BLOCK, CONTROL (FK-8500) (TR840E:AUS)	
13	3-987-748-21	PLATE (860), ORNAMENTAL (TR840E)	
13	3-987-748-51	PLATE (860), ORNAMENTAL (TR640E)	
13	3-987-748-61	PLATE (860), ORNAMENTAL (TR511E)	
13	3-987-748-71	PLATE (860), ORNAMENTAL (TR845E)	
13	3-987-748-81	PLATE (860), ORNAMENTAL (TR411E)	
13	3-987-749-01	PLATE (860), ORNAMENTAL (TR730E)	
13	3-987-749-11	PLATE (860), ORNAMENTAL (TR412E)	
13	3-987-749-31	PLATE (860), ORNAMENTAL (TR311)	
13	3-987-749-41	PLATE (860), ORNAMENTAL (TR512E)	
13	3-987-749-91	PLATE (860), ORNAMENTAL (TR311E)	
14	3-987-645-01	CABINET (N) (TR311/TR311E/TR411E/TR412E)	
15	3-987-639-01	CABINET (S(870)) (ECXEPT TR311/TR311E/TR411E/TR412E)	
16	3-987-717-01	SCREW, TRIPOD	
17	3-962-826-01	SCREW (2X4)	
18	3-713-786-21	SCREW (M2X3)	
19	3-948-339-61	TAPPING	
20	3-679-362-11	SCREW	
21	8-917-593-90	COMMANDER, REMOTE (RMT-717) (TR845E)	
22	3-742-854-01	LID-BATTERY CASE (FOR RMT-717) (TR845E)	
J001	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)	
S003	1-572-688-11	SWITCH, PUSH (EJECT)	

6-1-2. FRONT PANEL BLOCK ASSEMBLY


60
51
52
60
not supplied
not supplied
60
60
59
not supplied
57
not supplied
58
56
55
54
61
MIC901
MIC902
CCD- TR730E/TR840E/
TR845E
53

Ref. No.	Part No.	Description	Remark
51	X-3948-184-1	PANEL (870) ASSY, FRONT (TR840E:AEP,EE,NE,RU,UK/TR845E)	
51	X-3948-187-1	PANEL (870) ASSY, FRONT (TR640E)	
51	X-3948-188-1	PANEL (870) ASSY, FRONT (TR511E/TR512E)	
51	X-3948-189-1	PANEL (870) ASSY, FRONT (TR311/TR311E/TR411E)	
51	X-3948-190-1	PANEL (870) ASSY, FRONT (TR730E)	
51	X-3948-191-1	PANEL (870) ASSY, FRONT (TR840:AUS)	
51	X-3948-192-1	PANEL (870) ASSY, FRONT (TR412E)	
52	A-7073-449-A	MA-311(H0) BOARD, COMPLETE (TR730E/TR840E/TR845E)	
52	A-7073-463-A	MA-311(7ZL) BOARD, COMPLETE (TR311/TR311E/TR411E)	
52	A-7073-493-A	MA-311(MM0) BOARD, COMPLETE (TR511E/TR512E/TR640E)	
52	A-7073-504-A	MA-311(7Z) BOARD, COMPLETE (TR412E)	
53	X-3948-170-1	GRILLE (870) ASSY, MICROPHONE	
54	3-987-632-01	HOLDER, P KNOB	
55	3-973-619-01	SPRING, COMPRESSION	
56	3-987-633-01	BUTTON, LOCK	
57	3-987-631-01	KNOB, P (TR-511E:AEP,EE,NE,RU,UK/TR640E/TR840E:AEP,EE,NE,RU,UK/TR845E)	
57	3-987-631-02	KNOB, P (EXCEPT TR-511E:AEP,EE,NE,RU,UK/TR640E/TR840E:AEP,EE,NE,RU,UK/TR845E)	
58	3-987-882-01	SPRING, TORSION	
59	3-987-642-01	SPRING, CLICK	
60	3-948-339-61	TAPPING	
* 61	3-989-247-01	MA CUSHION	
MIC901	1-542-312-11	MICROPHONE (L-CH)	
MIC902	1-542-312-11	MOCROPHONE (R-CH)(TR730E/TR840E/TR845E)	

6-1-3. CABINET (R) BLOCK ASSEMBLY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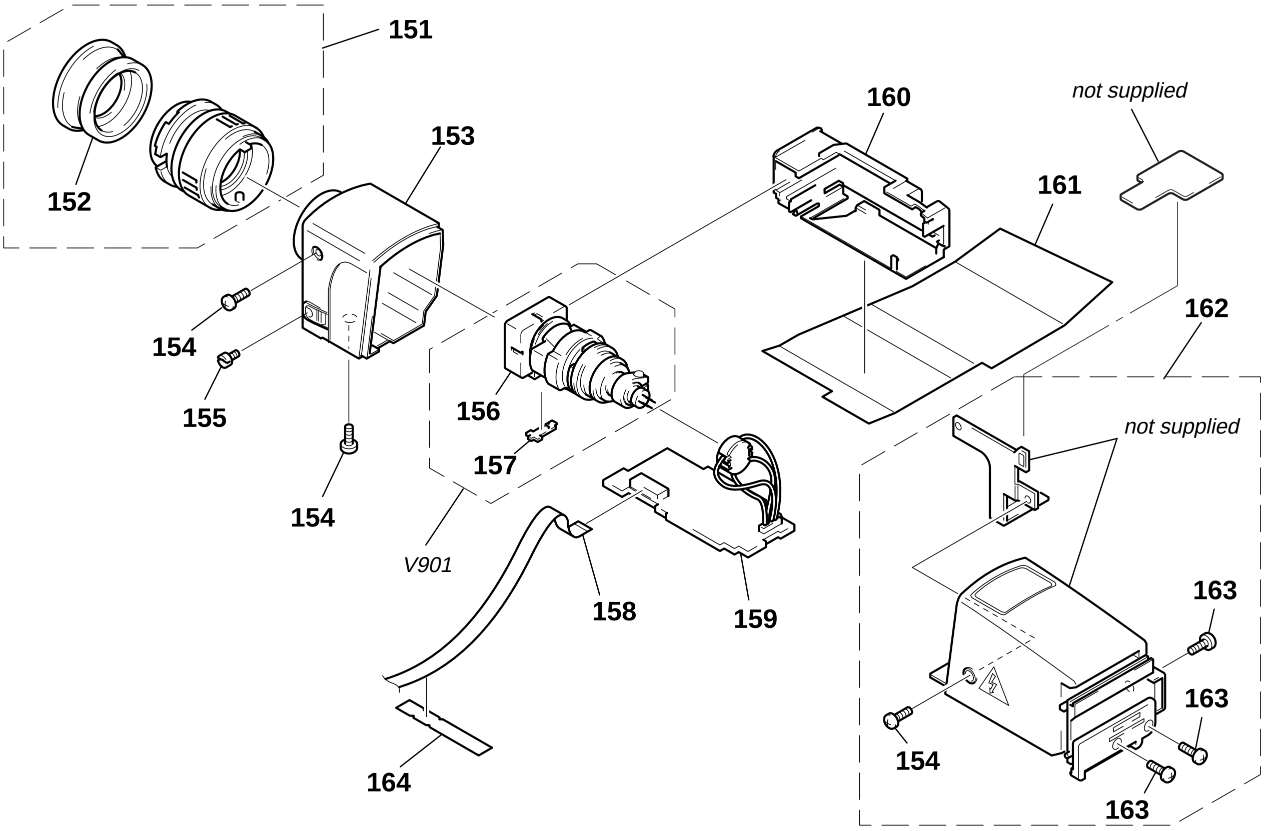
not supplied
111
107
111
111
111
111
110
102
111
LCD901
108
not supplied
114
CCD-TR511E/TR512E/
TR640E/TR730E/
TR840E/TR845E
113
112
not
supplied
ND801
CCD-TR840E/
TR845E
109
not supplied

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
101	1-475-620-11	SWITCH BLOCK, CONTROL(MF-8500) (TR511E/TR512E/TR640E/TR730E/TR840E/TR845E)	
102	X-3948-254-1	CABINET (R) (860) ASSY (TR511E:AEP,UK/TR640E:AEP,UK)	
102	X-3948-255-1	CABINET (R) (864) ASSY (TR840E:AEP/TR845E)	
102	X-3948-256-1	CABINET (R) (843) ASSY (TR412E:AEP)	
102	X-3948-257-1	CABINET (R) (842) ASSY (TR411E:AEP,UK)	
102	X-3948-258-1	CABINET (R) (852) ASSY (TR511E:E,HK,AUS,CN/TR512E/TR730E)	
102	X-3948-259-1	CABINET (R) (863) ASSY (TR840E:EE,NE,RU,AUS,UK)	
102	X-3948-261-1	CABINET (R) (840) ASSY (TR311/TR311E)	
102	X-3948-262-1	CABINET (R) (843-2) ASSY (TR412E:EE,NE,RU)	
102	X-3948-462-1	CABINET (R) (8401-2) ASSY (TR411E:EE,NE,RU)	
103	3-472-222-99	SPRING, TENSION	
* 104	3-987-842-01	SHEET, VF FLEXIBLE RETAINER (EXCEPT TR730E)	
105	3-987-786-01	BASE (878), VF	
106	3-987-783-01	LOCK, TILT	
107	1-783-240-11	CABLE, FLEXIBLE FLAT (FFC-236)	
108	A-7073-425-A	CF-49(C) BOARD, COMPLETE (TR512E)	
108	A-7073-450-A	CF-49(MM) BOARD, COMPLETE (TR511E/TR640E/TR840E/TR845E)	
108	A-7073-475-A	CF-49(7L) BOARD, COMPLETE (TR311/TR311E/TR411E/TR412E)	
108	A-7073-545-A	CF-49(CR) BOARD, COMPLETE (TR730E)	
109	X-3948-248-1	COVER (860) ASSY, TR (TR511E/TR512E/TR640E)	
109	X-3948-249-1	COVER (864C) ASSY, TR (TR840E)	
109	X-3948-251-1	COVER (843) ASSY, TR (TR311/TR311E/TR411E/TR412E)	
109	X-3948-265-1	COVER (861) ASSY, TR (TR730E)	
109	X-3948-393-1	COVER (864D) ASSY, TR (TR845E)	
* 110	3-987-755-01	HOLDER (864), LCD (TR730E/TR840E/TR845E)	
* 110	3-987-755-11	HOLDER (864), LCD (EXCEPT TR730E/TR840E/TR845E)	
111	3-948-339-61	TAPPING	
112	3-987-744-01	KNOB, IR (TR511E/TR512E/TR640E/TR730E/TR840E/TR845E)	
113	3-987-739-01	SPRING, LINK PLATE (TR511E/TR512E/TR640E/TR730E/TR840E/TR845E)	
114	3-969-465-01	SPRING, AE	
115	3-948-339-01	SCREW,TAPPING	
LCD901	A-7093-473-A	INDICATION LCD BLOCK ASSY (TR311/TR311E/TR411E/TR412E)	
LCD901	A-7093-486-A	INDICATION LCD BLOCK ASSY (TR840E/TR845E)	
LCD901	A-7093-509-A	INDICATION LCD BLOCK ASSY (TR511E/TR640E/TR840E/TR845E)	
⚠ND801	1-517-759-11	LIGHT, BACK (TR840E/TR845E)	

6-1-4. EVF BLOCK ASSEMBLY (B/W EVF) (EXCEPT TR512E/TR730E)

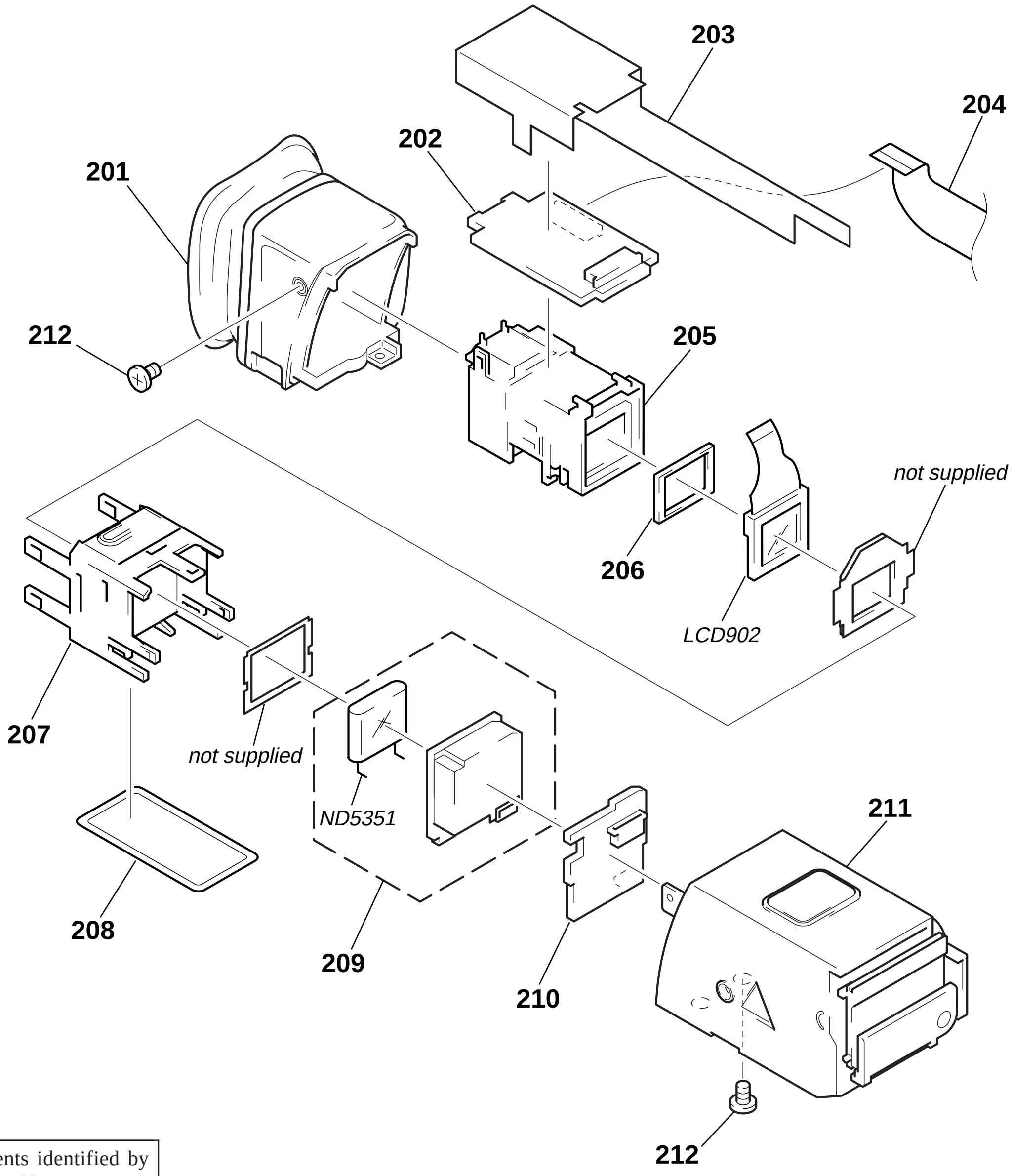


The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
151	X-3944-966-1	FINDER ASSY	
152	3-963-391-01	EYE CUP	
153	X-3948-278-1	CABINET (REAR) (878) B ASSY	
154	3-968-729-61	SCREW (M2X3), LOCK ACE, P2	
155	3-975-898-01	SCREW (T), F LOCK	
156	3-977-292-01	MASK, CRT	
157	3-725-130-01	COVER, HINGE VOLTAGE	
158	1-783-241-11	CABLE, FLEXIBLE FLAT (FFC-235)	
159	A-7066-774-A	VF-99(HP) BOARD, COMPLETE(EXCEPT TR311)	
159	A-7066-792-A	VF-99(VHL4) BOARD, COMPLETE (TR311)	

Ref. No.	Part No.	Description	Remark
160	X-3948-279-1	HOLDER (878) ASSY, CRT	
* 161	3-987-844-01	SHEET, VF (B/W) ELECTRSTATIC	
162	X-3948-277-1	CABINET (FRONT) (878) B ASSY	(TR840E/TR845E)
162	X-3948-363-1	CABINET (FRONT) (872) B ASSY	(TR511E/TR640E)
162	X-3948-364-1	CABINET (FRONT) (887D) B ASSY	(TR311/TR311E/TR411E/TR412E)
163	3-948-339-61	TAPPING	
* 164	3-987-843-01	SHEET, VF FLEXIBLE LOCK	
⚠V901	1-452-673-31	CRT ASSY (M01KXX90WB)	

6-1-5. EVF BLOCK ASSEMBLY (COLOR EVF) (TR512E/TR730E)


203
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LCD902
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ND5351
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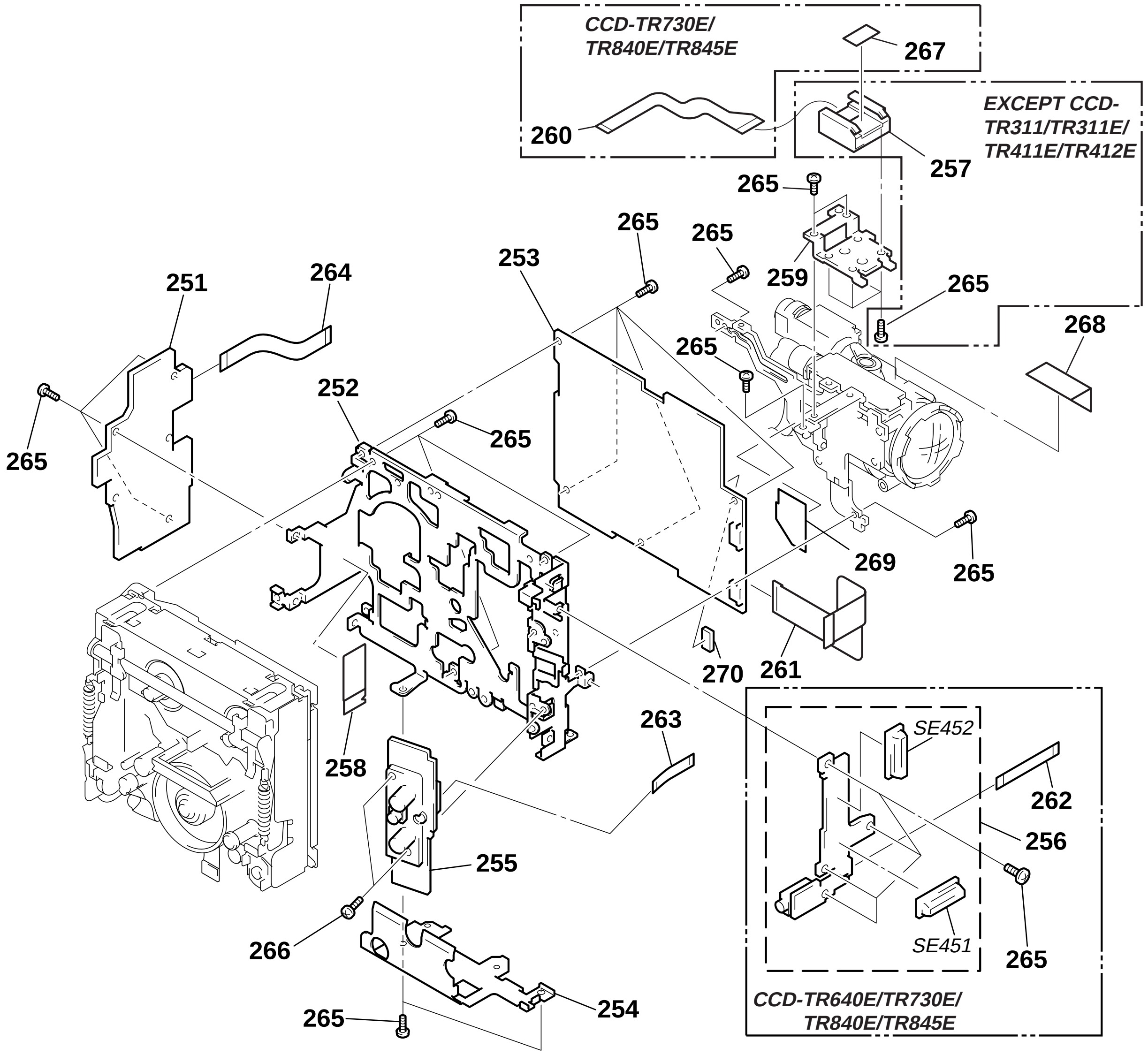
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
201	X-3948-237-1	CABINET (REAR)(SC)(N) ASSY, EVF	
202	A-7073-437-A	VF-119 BOARD, COMPLETE	
* 203	3-987-666-01	SHEET (860), INSULATING, VF	
204	1-668-962-11	FP-638 FLEXIBLE BOARD	
205	X-3948-229-1	LENS ASSY (860), VF	
* 206	3-960-302-11	CUSHION (1), LCD	
207	X-3946-886-1	HOLDER ASSY, PRISM	
* 208	3-987-667-01	SHEET, VF LIGHT INTERCEPTION	
209	A-7073-439-A	LB-54 BOARD, COMPLETE	
210	A-7073-438-A	VF-120 BOARD, COMPLETE	
211	X-3948-233-1	CABINET (FRONT)(864) ASSY, EVF	
212	3-968-729-61	SCREW (M2X3), LOCK ACE, P2	
LCD902	8-753-023-36	LCX024AK-5	
⚠ND5351	1-517-414-51	FLUORESCENT TUBE (0.55 INCH)	

6-1-6. MAIN BOARDS BLOCK ASSEMBLY


CCD-TR730E/
TR840E/TR845E
267
260
EXCEPT CCD-
TR311/TR311E/
TR411E/TR412E
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SE452
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SE451
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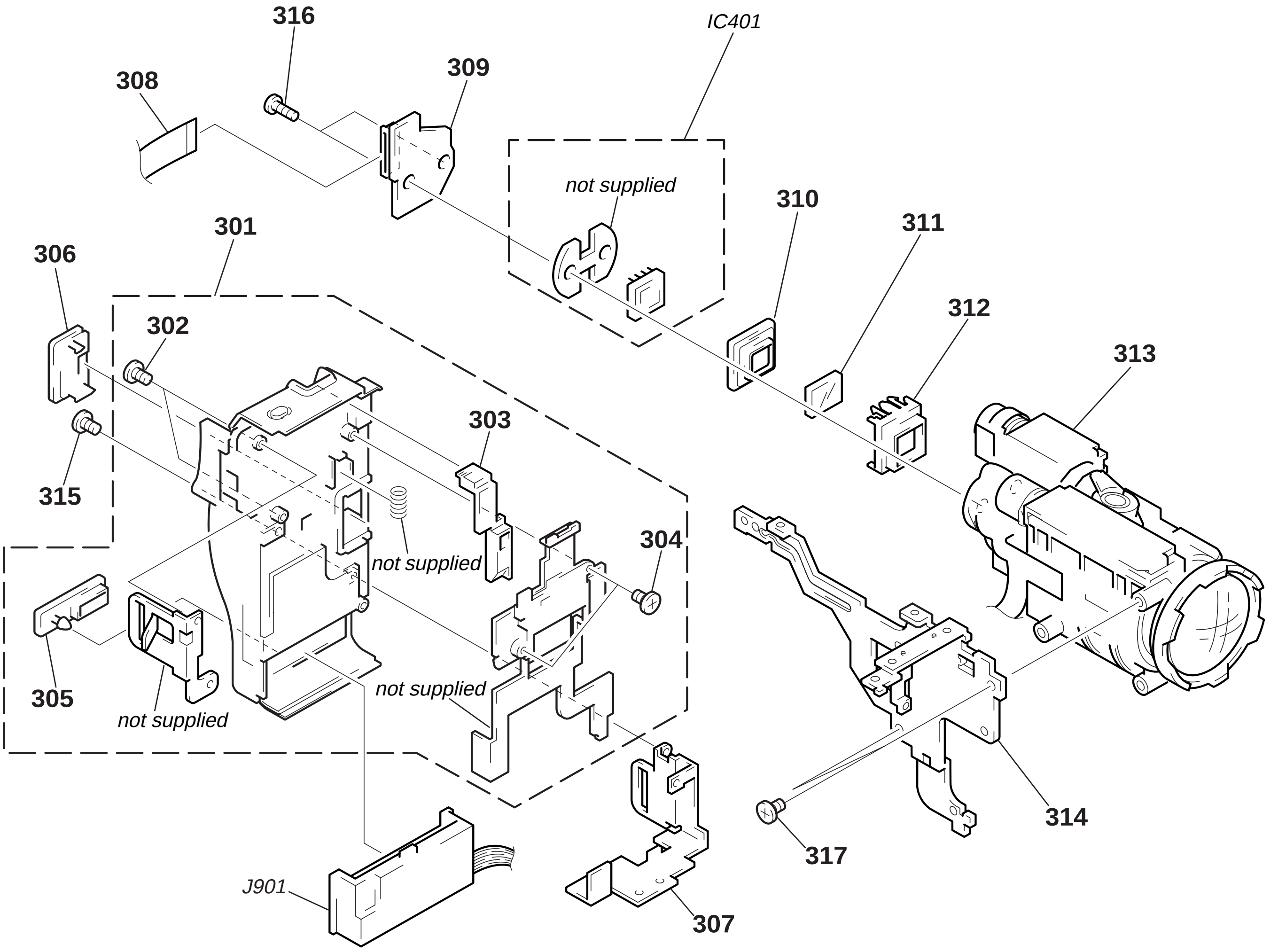
265
254
CCD-TR640E/TR730E/
TR840E/TR845E

Be sure to read "Note on the CCD Imager replacement" on page 4–8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
251	A-7073-448-A	DD-105(H) BOARD, COM PLETE	(TR840E/TR845E)
251	A-7073-544-A	DD-105(MCR) BOARD, COMPLETE (TR730E)	
251	A-7073-474-A	DD-105(MM) BOARD, COMPLETE	(TR311/TR311E/TR411E/TR412E/TR511E/TR640E)
251	A-7073-506-A	DD-105(C) BOARD, COMPLETE (TR512E)	
252	3-987-711-01	FRAME (A), MD	
253	A-7093-440-A	VC-195(7ZCBU) BOARD, COMPLETE (TR311)	
253	A-7093-442-A	VC-195(HOGP) BOARD, COMPLETE	(TR840E:AUS)
253	A-7093-443-A	VC-195(MCROP) BOARD, COMPLETE (TR730E)	
253	A-7093-444-A	VC-195(ZCOP) BOARD, COM PLETE (TR512E)	
253	A-7093-445-A	VC-195(HODE) BOARD, COM PLETE (TR845E)	
253	A-7093-446-A	VC-195(HOE) BOARD, COM PLETE	(TR840E:AEP,EE,NE,RU,UK)
253	A-7093-447-A	VC-195(MMOE) BOARD, COM PLETE (TR640E)	
253	A-7093-448-A	VC-195(ZOE) BOARD, COM PLETE	(TR311E/TR411E/TR412E/TR511E)
254	3-987-675-01	FRAME (B), MD	
255	A-7073-422-A	PJ-81(M) BOARD, COMPLETE	(EXCEPT TR730E/TR840E/TR845E)
255	A-7073-426-A	PJ-81(H) BOARD, COMPLETE (TR840E/TR845E)	
255	A-7073-543-A	PJ-81(S) BOARD, COMPLETE (TR730E)	
256	A-7073-423-A	SE-65(MM) BOARD, COMPLETE (TR640E)	
256	A-7073-427-A	SE-65(H) BOARD, COMPLETE	(TR730E/TR840E/TR845E)
257	1-774-867-31	CONNECTOR, EXTERNAL (HOT SHOE) 8P	(TR730E/TR840E/TR845E)
257	X-3946-197-1	SHOE ASSY (TR511E/TR512E/TR640E)	
* 258	3-987-716-01	PROTECTOR, LS FLEXIBLE	
259	3-987-719-01	BRACKET, SHOE	
260	1-668-978-11	FP-633 FLEXIBLE BOARD	(TR511E/TR512E/TR640E)
261	1-668-960-11	FP-629 FLEXIBLE BOARD	
262	1-668-956-11	FP-620 FLEXIBLE BOARD	(TR640E/TR730E/TR840E/TR845E)
263	1-668-957-11	FP-621 FLEXIBLE BOARD	
264	1-668-958-11	FP-622 FLEXIBLE BOARD	
265	3-713-786-21	SCREW (M2X3)	
266	3-962-826-01	SCREW (2X4)	
267	2-532-810-00	CUSHION (TR730E/TR840E/TR845E)	
* 268	3-989-122-01	SHEET, LENS INSULATING	
* 269	3-987-718-01	PROTECTOR, HS FLEEXIBLE	(TR730E/TR840E/TR845E)
* 270	3-989-470-01	CUSHION, LENS	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW)	
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH)	

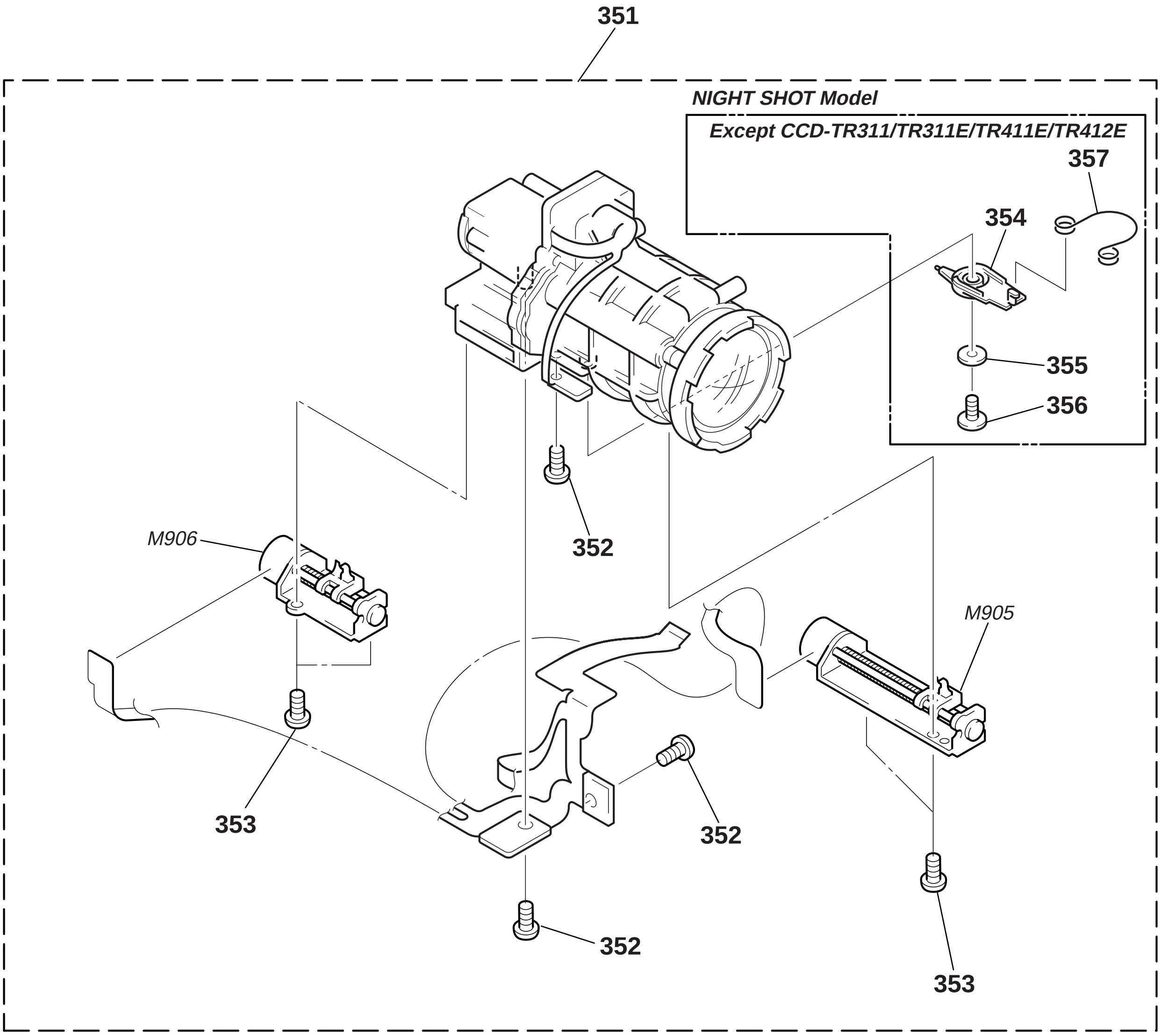
6-1-7. BATTERY PANEL AND LENS BLOCK ASSEMBLY



Be sure to read “Note on the CCD Imager replacement” on page 4–8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
301	X-3948-171-1	PANEL ASSY, BATTERY (EXCEPT TR730E)	
301	X-3948-174-1	PANEL ASSY, BATTERY (TR730E)	
302	3-968-729-11	SCREW (M2X3), LOCK ACE, P2	
303	3-987-656-01	LID, JACK	
304	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
* 305	3-987-683-01	LID, BATTERY	
306	3-975-752-01	LID (BT), CPC	
307	3-987-679-01	SHEET METAL (LOWER), STRAP	
308	1-668-959-11	FP-623 FLEXIBLE BOARD	
309	A-7073-420-A	CD-181 BOARD, COMPLETE	
310	3-953-817-01	RUBBER (F), SEAL (TR311/TR311E/TR411E/TR412E/TR511E/TR512E)	
310	3-968-054-11	RUBBER (FM), SHIELD (TR640E/TR730E/TR840E/TR845E)	
311	1-758-084-21	FILTER BLOCK, OPTICAL (TR640E/TR730E/TR840E/TR845E)	
311	1-758-133-21	FILTER BLOCK, OPTICAL (TR311/TR311E/TR411E/TR412E/TR511E/TR512E)	
312	3-978-981-11	ADAPTOR (FK), CCD FITTING	
313	8-848-724-01	DEVICE, LENS, LSV-601A (SOC) (TR311/TR311E/TR411E/TR412E)	
313	8-848-722-01	DEVICE, LENS LSV-600A(SOC) (EXCEPT TR311/TR311E/TR411E/TR412E)	
314	3-987-712-01	FRAME, LENS	
315	3-962-826-01	SCREW (2X4)	
316	3-318-203-11	SCREW (B1.7X6), TAPPING	
317	3-948-339-61	TAPPING	
IC401	A-7030-862-A	CCD BLOCK ASSY (206 SERVICE) (TR311)	
IC401	A-7030-871-A	CCD BLOCK ASSY (211 SERVICE) (TR640E/TR730E/TR840E/TR845E)	
IC401	A-7030-874-A	CCD BLOCK ASSY (207 SERVICE) (TR311E/TR411E/TR412E/TR511E/TR512E)	
J901	1-694-384-11	TERMINAL BOARD, BATTERY	

6-1-8. ZOOM LENS BLOCK ASSEMBLY


351
NIGHT SHOT Model
Except CCD-TR311/TR311E/TR411E/TR412E
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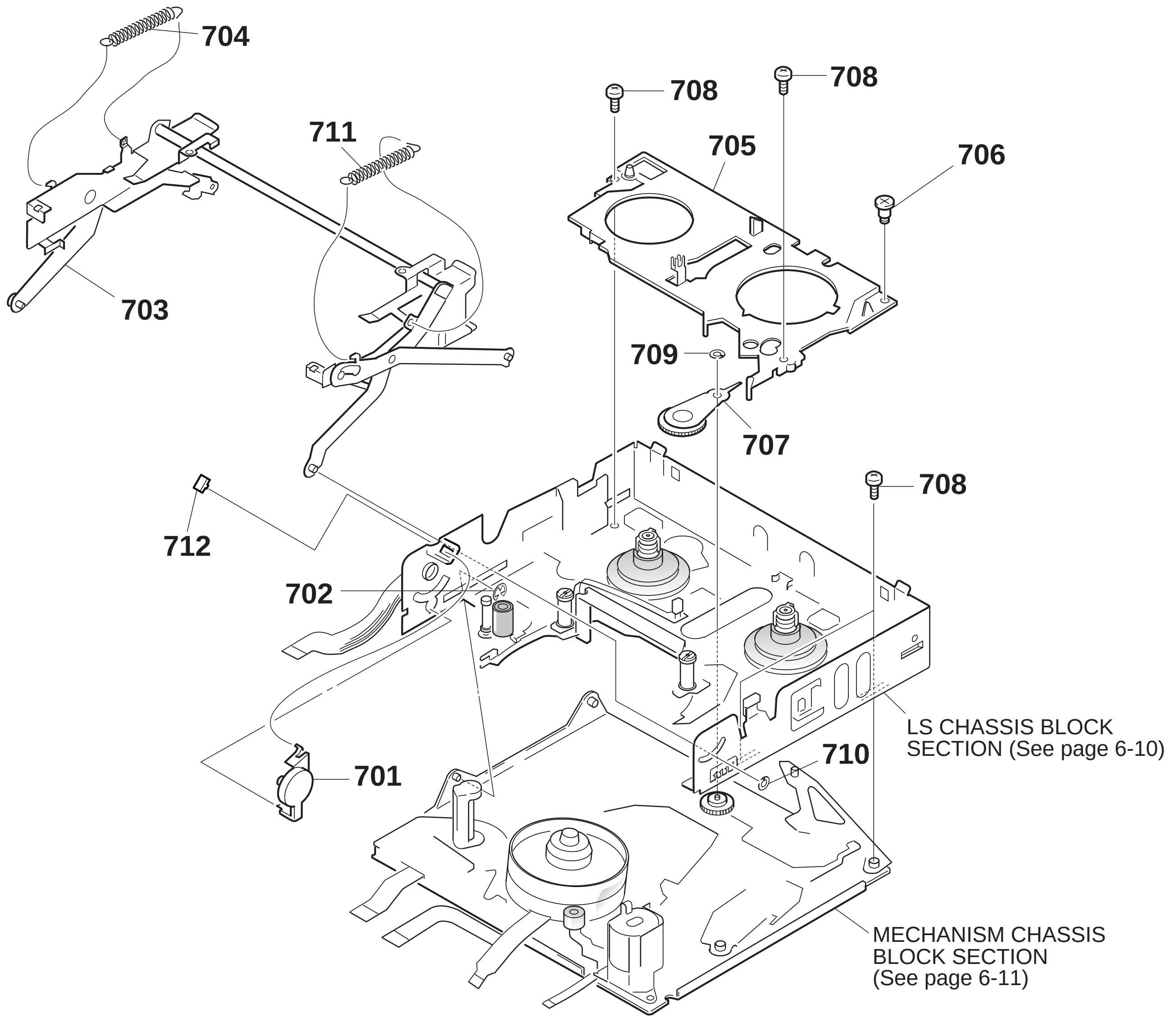
Ref. No.	Part No.	Description	Remark
351	8-848-722-01	DEVICE, LENS LSV-600A (SOC)	(EXCEPT TR311/TR311E/TR411E/TR412E)
351	8-848-724-01	DEVICE, LENS LSV-601A (SOC)	(TR311/TR311E/TR411E/TR412E)
352	3-713-791-51	SCREW (M1.7X3.5), TAPPING, P2	
353	3-713-791-41	SCREW (M1.7X5), TAPPING PS	
354	3-979-029-01	LEVER, IR	(EXCEPT TR311/TR311E/TR411E/TR412E)
355	2-327-405-01	WASHER	(EXCEPT TR311/TR311E/TR411E/TR412E)
356	2-623-756-21	SCREW (B1.7X5), P	(EXCEPT TR311/TR311E/TR411E/TR412E)
357	3-979-037-11	SPRING, RETURN	(EXCEPT TR311/TR311E/TR411E/TR412E)
M905	1-763-047-11	MOTOR, FOCUS STEPPING	
M906	1-763-046-11	MOTOR, ZOOM STEPPING	

6-1-9. CASSETTE COMPARTMENT ASSEMBLY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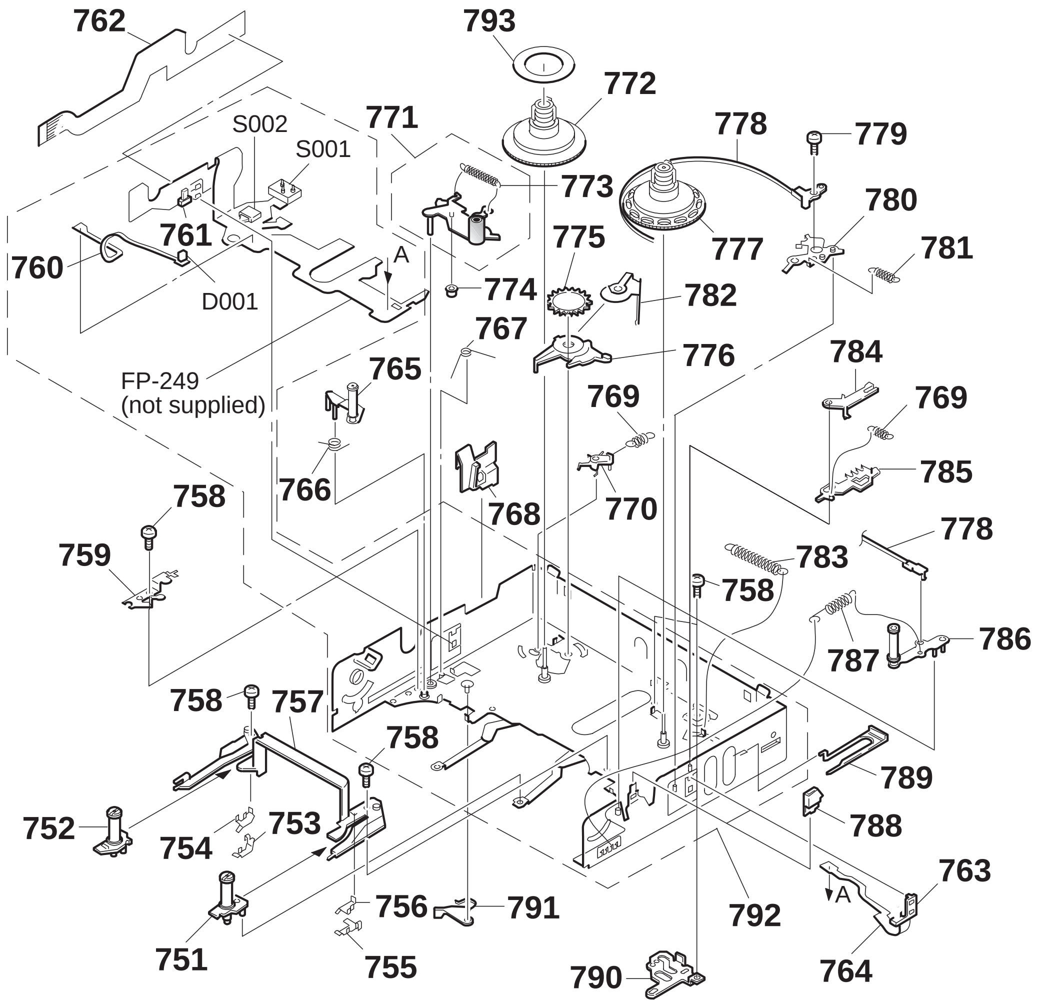
LS CHASSIS BLOCK
SECTION (See page 6-10)
701
MECHANISM CHASSIS
BLOCK SECTION
(See page 6-11)

Ref. No.	Part No.	Description	Remark
701	A-7040-421-A	DAMPER ASSY	
702	7-624-102-04	STOP RING 1.5, TYPE -E	
703	X-3945-400-X	CASSETTE COMPARTMENT ASSY	
704	3-965-587-03	SPRING, TENSION	
705	3-965-584-08	RETAINER, GOOSENECK	
706	3-976-055-01	SCREW (M1.4X1)	
707	X-3945-399-1	GEAR ASSY, GOOSENECK	
708	3-947-503-01	SCREW (M1.4X2.5)	
709	3-331-007-21	WASHER	
710	3-727-176-01	WASHER, STOPPER	
711	3-973-268-01	SPRING, TENSION	
712	3-971-076-01	FASTENER, D	

6-1-10. LS CHASSIS ASSEMBLY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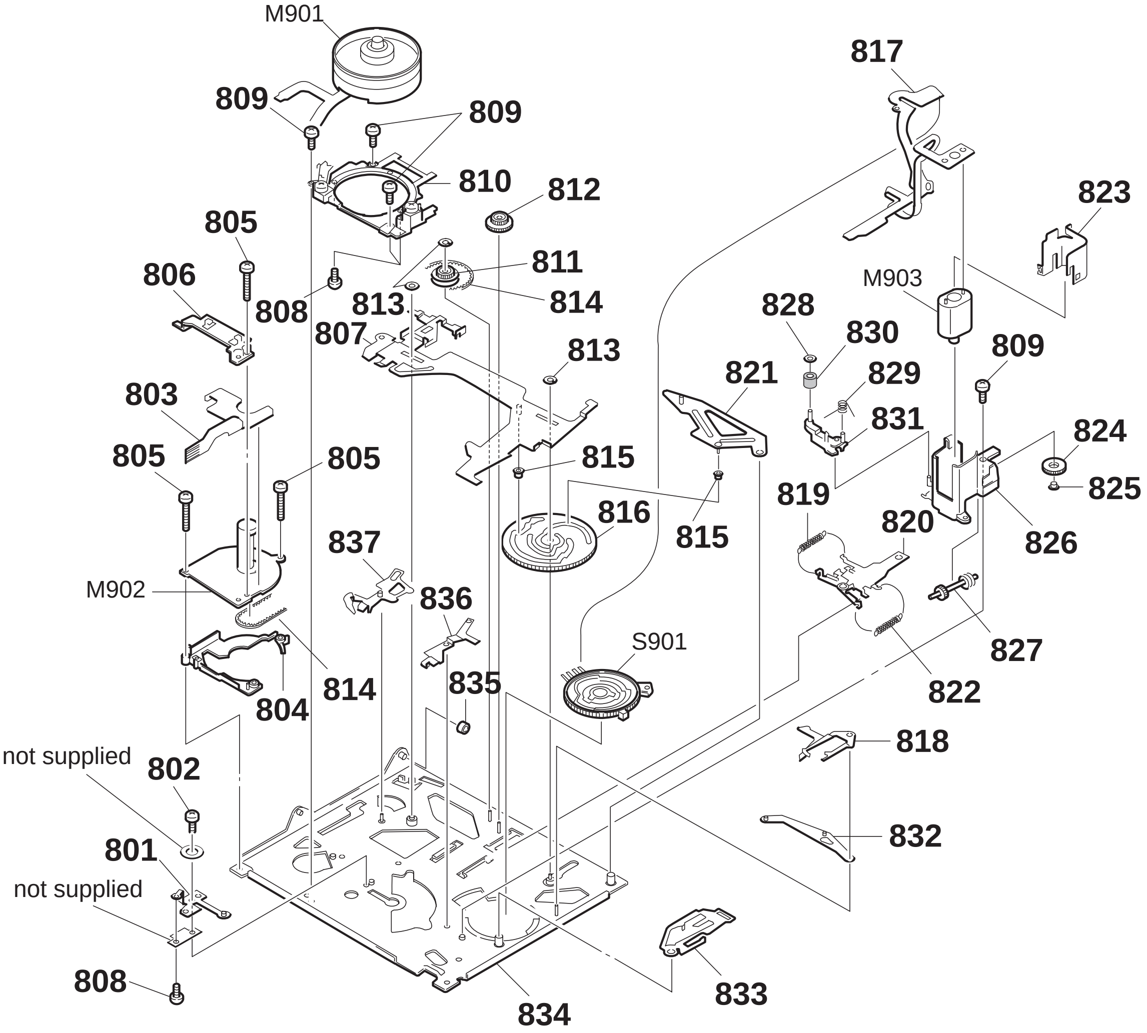
Ref. No.	Part No.	Description	Remark
751	A-7040-419-A	BASE (S) BLOCK ASSY, GUIDE	
752	A-7040-418-B	BASE (T) BLOCK ASSY, GUIDE	
753	3-965-559-01	STOPPER (T)	
754	3-965-557-01	STOPPER (T), GB	
755	3-965-558-01	STOPPER (S)	
756	3-965-556-01	STOPPER (S), GB	
757	3-965-553-01	RAIL, GUIDE	
758	3-947-503-01	SCREW (M1.4X2.5)	
759	3-965-573-01	RETAINER, TG4	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
761	3-965-552-01	HOLDER (T), SENSOR	
762	1-657-786-13	FP-221 FLEXIBLE BOARD	
763	3-965-551-01	HOLDER (S), SENSOR	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
765	A-7040-417-A	ARM BLOCK ASSY, TG4	
766	3-965-574-01	SPRING, TORSION	
767	3-965-575-01	SPRING (PINCH), TORSION	
768	3-965-568-01	GUIDE, LOCK	
769	3-965-562-01	SPRING (RATCHET), TENSION	
770	3-965-581-03	RATCHET, T	
771	X-3945-394-1	ARM ASSY, PINCH	
772	X-3945-398-2	DECK ASSY, REEL, T	
773	3-965-648-01	SPRING (PINCH), TENSION	
774	3-965-579-01	ROLLER, PINCH PRESS	
775	3-965-563-01	GEAR, T SOFT	
776	3-965-565-01	CLAW, T SOFT	
777	X-3945-397-1	DECK ASSY, REEL, S	
778	X-3945-396-1	BAND ASSY, TENSION REGULATOR	
779	3-945-756-01	SCREW (M1.4X3)	
780	3-965-583-01	ARM, RVS	
781	3-965-580-01	SPRING, TENSION	
782	3-966-384-01	SPRING, T SOFT	
783	3-965-578-01	SPRING, TENSION COIL	
784	3-965-560-01	RATCHET, S	
785	3-965-561-01	PLATE, RELEASE, S RATCHET	
786	X-3945-395-1	ARM ASSY, TG1	
787	3-965-576-01	SPRING (TG1), TENSION	
788	3-965-567-01	LID OPEN	
789	3-965-566-01	COVER, LS GUIDE	
* 790	3-965-577-01	PLATE, CAM, LS	
791	3-965-569-01	ARM, EJ	
792	A-7040-427-A	CHASSIS (S1) ASSY, LS	
* 793	3-972-838-01	SPACER, REEL	
D001	8-719-988-42	DIODE GL453	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	

6-1-11. MECHANISM CHASSIS ASSEMBLY



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S901
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not supplied
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not supplied
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Ref. No.	Part No.	Description	Remark
801	X-3947-343-1	GROUND (IM) ASSY, SHAFT	
802	3-965-550-02	SCREW (M1.7X1.6)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
804	3-965-545-01	SPACER, CAPSTAN	
805	3-965-549-01	SCREW (M1.4 X 6.5)	
806	3-966-349-01	HOLDER, FLEXIBLE	
807	3-971-644-01	SLIDER (2), M	
808	3-971-939-01	SCREW (M1.4)	
809	3-947-503-01	SCREW (M1.4X2.5)	
810	A-7040-416-A	BASE BLOCK ASSY, DRUM	
811	3-965-527-01	GEAR, CHANGE	
812	3-965-544-01	GEAR, RELAY	
813	3-331-007-21	WASHER	
814	3-965-546-01	BELT, TIMING	
815	3-965-533-01	ROLLER, LS	
816	3-965-528-01	GEAR, CAM	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
818	3-965-529-01	PLATE, REGULATOR (LIMITTER ARM T), COIL	
819	3-965-536-01	SPRING (LIMITTER ARM T), COIL	
820	X-3945-388-1	SLIDER ASSY, GL	
821	3-965-532-01	ARM, LS	
822	3-965-535-01	SPRING (LIMITTER ARM S), COIL	
823	3-965-542-01	SHIELD, MOTOR	
824	3-965-539-01	GEAR (A)	
825	3-965-538-01	SLEEVE, MOTOR HOLDER	
826	3-965-540-01	HOLDER, MOTOR	
827	3-965-541-01	SHAFT, WORM	
828	3-321-393-01	WASHER, STOPPER	
829	3-965-724-01	SPRING, TORSION	
830	A-7040-423-A	ROLLER BLOCK ASSY, HC	
831	X-3945-407-1	ARM ASSY, HC ROLLER	
832	3-965-531-01	ARM, GL	
833	3-965-530-01	PLATE (2), REGULATOR, TENSION	
834	X-3947-915-2	CHASSIS ASSY, MECHANICAL	
835	3-965-526-02	ROLLER, LS GUIDE	
836	3-965-547-01	ARM, HC DRIVING	
837	3-965-534-01	PLATE, PRESS, PINCH	
M901	A-7048-868-A	DRUM ASSY (DGH-0E2A-R) (PAL)	
M901	A-7048-870-A	DRUM ASSY (DGH-0E3A-R) (NTSC)	
M902	8-835-531-32	CAPSTAN ASSY	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	

6-2. ELECTRICAL PARTS LIST

Note:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μ A..., uPA...: μ PA..., uPB...: μ PB..., uPC...: μ PC..., uPD...: μ PD...
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H
- Abbreviation
  EE : East European Model
  NE : North European Model
  RU : Russian Model
  HK : Hong Kong Model
  AUS : Australian Model
  CN : Chinese Model

Ref. No.	Part No.	Description	Remark
	A-7073-420-A	CD-181 BOARD, COMPLETE	
		**********************	
		(Ref. No. 3,000 Series)	
		(IC401 is not included to mounted board.)	
		< CAPACITOR >	
C401	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C405	1-135-210-11	TANTALUM CHIP 4.7uF 20% 10V	
C406	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
		< CONNECTOR >	
CN401	1-766-346-21	CONNECTOR, FFC/FPC 16P	
		< IC >	
IC401	A-7030-862-A	CCD BLOCK ASSY (206 SERVICE)(CCD IMAGER) (TR311)	
IC401	A-7030-871-A	CCD BLOCK ASSY (211 SERVICE)(CCD IMAGER) (TR640E/TR730E/TR840E/R845E)	
IC401	A-7030-874-A	CCD BLOCK ASSY (207 SERVICE)(CCD IMAGER) (TR311E/TR411E/TR412E/TR511E/TR512E)	
		< COIL >	
L401	1-414-757-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q402	8-729-117-73	TRANSISTOR 2SC4178-F13F14	
		< RESISTOR >	
R404	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R405	1-216-809-11	METAL CHIP 100 5% 1/16W	
	A-7073-425-A	CF-49(C) BOARD, COMPLETE (TR512E)	
		************************	
	A-7073-450-A	CF-49(MM) BOARD, COMPLETE	
		*************************	
		(TR511E/TR640E/TR840E/TR845E)	
	A-7073-475-A	CF-49(7L) BOARD, COMPLETE	
		*************************	
		(TR311/TR311E/TR411E/TR412E)	
	A-7073-545-A	CF-49(CR) BOARD, COMPLETE (TR730E)	
		*************************	
		(Ref. No. 3,000 Series)	
		< BATTERY HOLDER >	
BH001	1-550-104-11	HOLDER, BATTERY	
		< BUZZER >	
BZ001	1-529-107-11	BUZZER, PIEZOELECTRIC	
		< CAPACITOR >	
C003	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
		< CONNECTOR >	
CN001	1-778-637-21	CONNECTOR, FFC/FPC (ZIF) 50P	
CN002	1-774-765-11	CONNECTOR, FFC/FPC 8P (EXCEPT TR311/TR311E/TR411E/TR412E)	
CN007	1-779-334-11	CONNECTOR, FFC/FPC 20P (TR512E/TR730E)	
* CN008	1-778-283-11	CONNECTOR, FFC/FPC 4P (EXCEPT TR512E/TR730E)	
CN009	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P	
		< DIODE >	
D005	8-719-420-14	DIODE MA8082-TX	
D006	8-719-420-14	DIODE MA8082-TX	
D008	8-719-404-49	DIODE MA111-TX	
		< IC >	
IC001	8-759-494-53	IC BU9729K-E2	
		< TRANSISTOR >	
Q001	8-729-402-42	TRANSISTOR UN5213-TX (EXCEPT TR512E/TR730E)	
Q003	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX (EXCEPT TR311/TR311E/TR411E/TR412E)	
Q005	8-729-230-72	TRANSISTOR 2SA1362-(YG)-EL (EXCEPT TR311/TR311E/TR411E/TR412E)	
		< RESISTOR >	
R003	1-216-833-11	METAL CHIP 10K 5% 1/16W (EXCEPT TR311/TR311E/TR411E/TR412E)	
R005	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R006	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R007	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R008	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R009	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R011	1-216-855-11	METAL CHIP 680K 5% 1/16W	
R012	1-216-864-11	METAL CHIP 0 5% 1/16W	
R013	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R015	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	

Be sure to read "Note on the CCD Imager replacement" on page 4–8 when changing the CCD imager.

Ref. No.	Part No.	Description			Remark
R016	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R019	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R020	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R022	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R023	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R025	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R026	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R028	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R029	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R031	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R034	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R035	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R036	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R038	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R039	1-216-838-11	METAL CHIP	27K	5%	1/16W
R041	1-216-838-11	METAL CHIP	27K	5%	1/16W
R042	1-216-809-11	METAL CHIP	100	5%	1/16W
					(EXCEPT TR311/TR311E/TR411E/TR412E)
R044	1-216-809-11	METAL CHIP	100	5%	1/16W
					(EXCEPT TR311/TR311E/TR411E/TR412E)
R046	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R047	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R048	1-216-838-11	METAL CHIP	27K	5%	1/16W
R049	1-216-849-11	METAL CHIP	220K	5%	1/16W
					(EXCEPT TR311/TR311E/TR411E/TR412E)
R050	1-216-853-11	METAL CHIP	470K	5%	1/16W
					(EXCEPT TR311/TR311E/TR411E/TR412E)
R051	1-216-837-11	METAL CHIP	22K	5%	1/16W
					(EXCEPT TR311/TR311E/TR411E/TR412E)
R052	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
					(EXCEPT TR311/TR311E/TR411E/TR412E)
R053	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TR311/TR311E/TR411E/TR412E)

< SWITCH >

Ref. No.	Part No.	Description
S001	1-771-029-31	SWITCH, TACTILE (DIGITAL EFFECT)(TR730E)
S003	1-762-851-21	SWITCH, KEY BOARD (DATE)
S006	1-762-851-21	SWITCH, KEY BOARD (PICTURE EFFECT)
S008	1-762-851-21	SWITCH, KEY BOARD (COUNTER RESET)
S010	1-762-851-21	SWITCH, KEY BOARD (MENU)
S012	1-771-029-31	SWITCH, TACTILE (EXPOSURE)
		(EXCEPT TR311/TR311E/TR411E/TR412E)
S015	1-771-025-21	SWITCH, ROTARY (ENCODER)(SEL/PUSH EXEC)
S017	1-762-851-21	SWITCH, KEY BOARD (BACK LIGHT)
S018	1-762-851-21	SWITCH, KEY BOARD (TITLE)
S020	1-762-442-21	SWITCH, ROTARY (PROGRAM AE)
S021	1-762-851-21	SWITCH, KEY BOARD (TIME)
S024	1-762-648-21	SWITCH, SLIDE (START/STOP MODE)

A-7073-448-A DD-105(H) BOARD, COMPLETE
****
(TR840E/TR845E)

A-7073-474-A DD-105(MM) BOARD, COMPLETE
****
(TR311/TR311E/TR411E/TR412E/TR511E/TR640E)

A-7073-506-A DD-105(C) BOARD, COMPLETE (TR512E)
****

A-7073-544-A DD-105(MCR) BOARD, COMPLETE (TR730E)
****
(Ref. No. 2,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remark
C801	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C802	1-162-960-11	CERAMIC CHIP	220PF	10%	50V
C803	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C804	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C805	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C806	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C807	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C808	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C809	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C810	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C811	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C812	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C813	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C814	1-104-913-11	TANTAL. CHIP	10uF	20%	16V
C815	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C816	1-119-751-11	TANTAL. CHIP	22uF	20%	16V
C817	1-113-991-11	TANTAL. CHIP	33uF	20%	16V
C819	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C820	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C821	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C823	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C824	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C825	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C832	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C834	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C836	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C837	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C838	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C841	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C843	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C844	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C846	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C847	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C848	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C849	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C850	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C851	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C854	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
					(TR512E/TR730E)
C855	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V
C856	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
					(TR730E/TR840E/TR845E)
C857	1-135-157-21	TANTALUM CHIP	10uF	20%	6.3V

Ref. No.	Part No.	Description	Remark
C860	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C861	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR512E/TR730E)
C864	1-113-985-11	TANTAL. CHIP 10uF 20% 20V	
C867	1-164-346-11	CERAMIC CHIP 1uF 16V	(TR512E/TR730E)
C868	1-135-214-21	TANTAL. CHIP 4.7uF 20% 20V	
C871	1-135-157-21	TANTALUM CHIP 10uF 20% 6.3V	
C872	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C876	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C877	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
		< CONNECTOR >	
* CN801	1-580-756-21	PIN, CONNECTOR 7P	
CN931	1-691-520-11	CONNECTOR, BOARD TO BOARD 48P	
CN932	1-766-346-21	CONNECTOR, FFC/FPC 16P	
CN934	1-766-673-21	CONNECTOR, FFC/FPC 12P	
CN935	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P	
		< DIODE >	
D801	8-719-067-36	DIODE MA3ZD1200LS0	
D802	8-719-067-36	DIODE MA3ZD1200LS0	
D803	8-719-067-36	DIODE MA3ZD1200LS0	
D804	8-719-067-36	DIODE MA3ZD1200LS0	
D805	8-719-067-36	DIODE MA3ZD1200LS0	
D809	8-719-027-77	DIODE MA796-TX	
D813	8-719-420-14	DIODE MA8082-TX	
D814	8-719-420-14	DIODE MA8082-TX	
D815	8-719-420-14	DIODE MA8082-TX	
D816	8-719-027-76	DIODE 1SS357-TPH3	
D817	8-719-421-27	DIODE MA728-TX	
D819	8-719-404-49	DIODE MA111-TX	(TR730E/TR840E/TR845E)
D932	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
D933	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
D934	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
D935	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
D936	8-719-045-87	DIODE MA4Z082WA-(K8).SO	
D938	8-719-420-14	DIODE MA8082-TX	
		< FERRITE BEAD >	
FB931	1-414-228-11	INDUCTOR CHIP 0UH	
FB932	1-414-228-11	INDUCTOR CHIP 0UH	
FB933	1-414-228-11	INDUCTOR CHIP 0UH	
FB934	1-414-228-11	INDUCTOR CHIP 0UH	
		< IC >	
IC801	8-759-384-78	IC SN104241PM-TEB	
		< COIL >	
L805	1-424-674-11	INDUCTOR 0uH	
L806	1-424-675-11	INDUCTOR 0uH	
L807	1-424-674-11	INDUCTOR 0uH	
L808	1-424-674-11	INDUCTOR 0uH	
L809	1-424-674-11	INDUCTOR 0uH	
L810	1-414-396-21	INDUCTOR 4.7uH	
L811	1-414-396-21	INDUCTOR 4.7uH	
L812	1-414-396-21	INDUCTOR 4.7uH	
L813	1-414-396-21	INDUCTOR 4.7uH	
L814	1-414-396-21	INDUCTOR 4.7uH	
L815	1-414-396-21	INDUCTOR 4.7uH	
L816	1-414-396-21	INDUCTOR 4.7uH	(TR512E/TR730E)
L817	1-414-396-21	INDUCTOR 4.7uH	
L818	1-414-396-21	INDUCTOR 4.7uH	
L819	1-414-400-11	INDUCTOR 22uH	
		< LINE FILTER >	
LF801	1-411-957-11	FILTER, COMMON MODE	
		< IC LINK >	
⚠PS801	1-533-761-21	LINK, IC (SMD)(1.4A/24V)	
⚠PS802	1-533-761-21	LINK, IC (SMD)(1.4A/24V)	
⚠PS803	1-533-761-21	LINK, IC (SMD)(1.4A/24V)	
⚠PS804	1-533-761-21	LINK, IC (SMD)(1.4A/24V)	
⚠PS806	1-533-761-21	LINK, IC (SMD)(1.4A/24V)	(TR730E/TR840E/TR845E)
		< TRANSISTOR >	
Q801	8-729-024-48	TRANSISTOR 2SK1830-TE85L	
Q802	8-729-041-69	TRANSISTOR MMSF5P02HDR2	
Q803	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q804	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q805	8-729-024-48	TRANSISTOR 2SK1830-TE85L	
Q807	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q808	8-729-043-94	TRANSISTOR CPH3106-PM-TL	
Q809	8-729-043-94	TRANSISTOR CPH3106-PM-TL	
Q810	8-729-043-94	TRANSISTOR CPH3106-PM-TL	
Q812	8-729-041-24	TRANSISTOR NDS355AN	
Q814	8-729-043-94	TRANSISTOR CPH3106-PM-TL	
Q815	8-729-043-94	TRANSISTOR CPH3106-PM-TL	
Q817	8-729-041-24	TRANSISTOR NDS355AN	
Q820	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR730E/TR840E/TR845E)
Q823	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q824	8-729-042-56	TRANSISTOR MGSF3455VT1	(TR730E/TR840E/TR845E)
Q826	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR512E/TR730E)
Q829	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q830	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q831	8-729-041-23	TRANSISTOR NDS356AP	(TR512E/TR730E)
Q834	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q837	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	(TR512E/TR730E)
Q841	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	(TR512E/TR730E)
Q842	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q843	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q846	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	(TR512E/TR730E)
Q847	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q851	8-729-041-69	TRANSISTOR MMSF5P02HDR2	
Q852	8-729-017-61	TRANSISTOR 2SB1581-T1	
Q853	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q854	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q855	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q856	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
Q932	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO		
Q933	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO		
Q934	8-729-037-53	TRANSISTOR	2SB1462J-QR(K8).SO		
		< RESISTOR >			
R801	1-216-841-11	METAL CHIP	47K	5%	1/16W
R802	1-218-893-11	RES,CHIP	82K	0.50%	1/16W
R803	1-216-833-11	METAL CHIP	10K	5%	1/16W
R804	1-216-837-11	METAL CHIP	22K	5%	1/16W
R805	1-216-835-11	METAL CHIP	15K	5%	1/16W
R806	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R807	1-216-839-11	METAL CHIP	33K	5%	1/16W
R808	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R809	1-216-813-11	METAL CHIP	220	5%	1/16W
R810	1-216-837-11	METAL CHIP	22K	5%	1/16W
R811	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R812	1-218-901-11	RES,CHIP	180K	0.50%	1/16W
R813	1-216-857-11	METAL CHIP	1M	5%	1/16W
R814	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R815	1-216-813-11	METAL CHIP	220	5%	1/16W
R816	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R817	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R818	1-216-813-11	METAL CHIP	220	5%	1/16W
R819	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R820	1-216-845-11	METAL CHIP	100K	5%	1/16W
R821	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R822	1-216-150-91	RES,CHIP	10	5%	1/8W
R824	1-216-837-11	METAL CHIP	22K	5%	1/16W
R825	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R826	1-216-821-11	METAL CHIP	1K	5%	1/16W
R827	1-216-821-11	METAL CHIP	1K	5%	1/16W
R828	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R829	1-216-837-11	METAL CHIP	22K	5%	1/16W
R830	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R831	1-216-841-11	METAL CHIP	47K	5%	1/16W
R832	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R833	1-216-839-11	METAL CHIP	33K	5%	1/16W
R834	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R835	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R836	1-216-837-11	METAL CHIP	22K	5%	1/16W
R837	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R838	1-216-837-11	METAL CHIP	22K	5%	1/16W
R839	1-216-837-11	METAL CHIP	22K	5%	1/16W
R840	1-216-839-11	METAL CHIP	33K	5%	1/16W
R841	1-216-834-11	METAL CHIP	12K	5%	1/16W
R859	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR730E/TR840E/TR845E)
R864	1-216-857-11	METAL CHIP	1M	5%	1/16W (TR730E/TR840E/TR845E)
R865	1-216-841-11	METAL CHIP	47K	5%	1/16W
R866	1-216-837-11	METAL CHIP	22K	5%	1/16W
R870	1-216-857-11	METAL CHIP	1M	5%	1/16W (TR512E/TR730E)
R871	1-216-857-11	METAL CHIP	1M	5%	1/16W (TR512E/TR730E)
R872	1-216-845-11	METAL CHIP	100K	5%	1/16W
R873	1-216-841-11	METAL CHIP	47K	5%	1/16W
R877	1-216-864-11	METAL CHIP	0	5%	1/16W (EXCEPT TR512E/TR730E)
R879	1-216-837-11	METAL CHIP	22K	5%	1/16W
R880	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R881	1-216-864-11	METAL CHIP	0	5%	1/16W
R882	1-218-903-11	RES,CHIP	220K	0.50%	1/16W
R885	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR512E/TR730E)
R889	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR512E/TR730E)
R890	1-216-845-11	METAL CHIP	100K	5%	1/16W
R894	1-216-861-11	METAL CHIP	2.2M	5%	1/16W (TR512E/TR730E)
R895	1-216-837-11	METAL CHIP	22K	5%	1/16W
R898	1-218-895-11	RES,CHIP	100K	0.50%	1/16W (TR512E/TR730E)
R899	1-218-883-11	RES,CHIP	33K	0.50%	1/16W (TR512E/TR730E)
R900	1-218-895-11	RES,CHIP	100K	0.50%	1/16W
R901	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R902	1-216-864-11	METAL CHIP	0	5%	1/16W
R908	1-216-841-11	METAL CHIP	47K	5%	1/16W
R910	1-216-833-11	METAL CHIP	10K	5%	1/16W
R911	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
R912	1-218-879-11	RES,CHIP	22K	0.50%	1/16W
R913	1-216-857-11	METAL CHIP	1M	5%	1/16W
R916	1-216-864-11	METAL CHIP	0	5%	1/16W (TR512E/TR730E)
R921	1-216-296-91	SHORT	0		
R922	1-216-296-91	SHORT	0		
R923	1-216-296-91	SHORT	0		
R932	1-216-841-11	METAL CHIP	47K	5%	1/16W
R933	1-216-821-11	METAL CHIP	1K	5%	1/16W
R934	1-216-821-11	METAL CHIP	1K	5%	1/16W
R935	1-216-821-11	METAL CHIP	1K	5%	1/16W
R936	1-216-821-11	METAL CHIP	1K	5%	1/16W
R937	1-216-821-11	METAL CHIP	1K	5%	1/16W
R938	1-216-821-11	METAL CHIP	1K	5%	1/16W
R939	1-216-821-11	METAL CHIP	1K	5%	1/16W
R940	1-216-819-11	METAL CHIP	680	5%	1/16W
R941	1-216-821-11	METAL CHIP	1K	5%	1/16W
R942	1-216-821-11	METAL CHIP	1K	5%	1/16W
R943	1-216-029-00	METAL CHIP	150	5%	1/10W
		< TRANSFORMER >			
⚠T801	1-431-749-11	TRANSFORMER, DC/DC CONVERTER			

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

FP-355 FP-249 (FP-356) LB-54 MA-311

Ref. No.	Part No.	Description	Remark
		FP-249 FLEXIBLE BOARD	
		**********************	
			(Ref. No. 8,000 Series)
	1-658-214-11	FP-356 FLEXIBLE BOARD	
	3-965-551-01	HOLDER (S), SENSOR	
	3-965-552-01	HOLDER (T), SENSOR	
		< HALL ELEMENT >	
H001	8-719-033-37	ELEMENT, HALL HW-105C	
H002	8-719-033-37	ELEMENT, HALL HW-105C	
		< TRANSISTOR >	
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F	
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F	
		< SWITCH >	
S001	1-692-614-11	SWITCH, PUSH (3 KEY)	(Hi8 MP, ME/MP, REC PROOF)
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	

Ref. No.	Part No.	Description	Remark
	1-658-213-11	FP-355 FLEXIBLE BOARD	
		**********************	
			(Ref. No. 8,000 Series)
		< DIODE >	
D001	8-719-988-42	DIODE GL453	

Ref. No.	Part No.	Description	Remark
	A-7073-439-A	LB-54 BOARD, COMPLETE (TR512E/TR730E)	
		**********************	
⚠ND5351	1-517-414-51	FLUORESCENT TUBE (0.55 INCH)	
		< CAPACITOR >	
C5351	1-113-642-11	TANTAL. CHIP 47uF 20% 10V	
C5352	1-115-566-11	CERAMIC CHIP 4.7uF 10% 10V	
C5353	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C5354	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C5355	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
C5356	1-163-020-00	CERAMIC CHIP 0.0082uF 10% 50V	
		< CONNECTOR >	
CN5351	1-784-564-11	CONNECTOR, BOARD TO BOARD 12P	
		< COIL >	
L5351	1-412-031-11	INDUCTOR CHIP 47uH	
L5352	1-412-029-11	INDUCTOR CHIP 10uH	
		< TRANSISTOR >	
Q5351	8-729-039-24	TRANSISTOR FX216-TL1	
		< RESISTOR >	
R5351	1-216-839-11	METAL CHIP 33K 5% 1/16W	

Ref. No.	Part No.	Description	Remark
		< TRANSFORMER >	
⚠T5351	1-426-848-51	TRANSFORMER, INVERTER	

Ref. No.	Part No.	Description	Remark
	A-7073-449-A	MA-311(H0) BOARD, COMPLETE	
		***************************	
			(TR730E/TR840E/TR845E)
	A-7073-463-A	MA-311(7ZL) BOARD, COMPLETE	
		****************************	
			(TR311/TR311E/TR411E)
	A-7073-493-A	MA-311(MM0) BOARD, COMPLETE	
		****************************	
			(TR511E/TR512E/TR640E)
	A-7073-504-A	MA-311(7Z) BOARD, COMPLETE (TR412E)	
		***************************	
			(Ref. No. 3,000 Series)
		< CAPACITOR >	
C306	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(EXCEPT TR311/TR311E/TR411E)
C321	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	(EXCEPT TR730E/TR840E/TR845E)
C322	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V	(EXCEPT TR730E/TR840E/TR845E)
C323	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(EXCEPT TR730E/TR840E/TR845E)
C324	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	(EXCEPT TR730E/TR840E/TR845E)
C325	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(EXCEPT TR730E/TR840E/TR845E)
C326	1-119-749-11	TANTAL. CHIP 33uF 20% 4V	(EXCEPT TR730E/TR840E/TR845E)
C327	1-110-563-11	CERAMIC CHIP 0.068uF 10% 16V	(EXCEPT TR730E/TR840E/TR845E)
C328	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(EXCEPT TR730E/TR840E/TR845E)
C329	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(EXCEPT TR730E/TR840E/TR845E)
C330	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	(EXCEPT TR730E/TR840E/TR845E)
C331	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(EXCEPT TR730E/TR840E/TR845E)
C332	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(EXCEPT TR730E/TR840E/TR845E)
C333	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR730E/TR840E/TR845E)
C334	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	(TR730E/TR840E/TR845E)
C335	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR730E/TR840E/TR845E)
C336	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	(TR730E/TR840E/TR845E)
C337	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TR730E/TR840E/TR845E)
C338	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	(TR730E/TR840E/TR845E)
C339	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TR730E/TR840E/TR845E)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Ref. No.	Part No.	Description	Remark
C340	1-162-927-11	CERAMIC CHIP 100PF 5%	50V (TR730E/TR840E/TR845E)
C341	1-165-176-11	CERAMIC CHIP 0.047uF 10%	16V (TR730E/TR840E/TR845E)
C342	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C343	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (TR730E/TR840E/TR845E)
C344	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V (TR730E/TR840E/TR845E)
C345	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V (TR730E/TR840E/TR845E)
C346	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C347	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V (TR730E/TR840E/TR845E)
C348	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V (TR730E/TR840E/TR845E)
C349	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V (TR730E/TR840E/TR845E)
C350	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V (TR730E/TR840E/TR845E)
C351	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C352	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V (TR730E/TR840E/TR845E)
C353	1-162-927-11	CERAMIC CHIP 100PF 5%	50V (TR730E/TR840E/TR845E)
C354	1-165-176-11	CERAMIC CHIP 0.047uF 10%	16V (TR730E/TR840E/TR845E)
C355	1-164-245-11	CERAMIC CHIP 0.015uF 10%	25V (TR730E/TR840E/TR845E)
C356	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C357	1-164-245-11	CERAMIC CHIP 0.015uF 10%	25V (TR730E/TR840E/TR845E)
C358	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C359	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V (TR730E/TR840E/TR845E)
C360	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C361	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C362	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C363	1-162-968-11	CERAMIC CHIP 0.0047uF 10%	50V (TR730E/TR840E/TR845E)
C364	1-164-245-11	CERAMIC CHIP 0.015uF 10%	25V (TR730E/TR840E/TR845E)
C365	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C366	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C367	1-164-227-11	CERAMIC CHIP 0.022uF 10%	25V (TR730E/TR840E/TR845E)
C368	1-164-245-11	CERAMIC CHIP 0.015uF 10%	25V (TR730E/TR840E/TR845E)
C369	1-162-962-11	CERAMIC CHIP 470PF 10%	50V (TR730E/TR840E/TR845E)
C370	1-162-962-11	CERAMIC CHIP 470PF 10%	50V (TR730E/TR840E/TR845E)

Ref. No.	Part No.	Description	Remark
C371	1-164-346-11	CERAMIC CHIP 1uF	16V (TR730E/TR840E/TR845E)
C372	1-164-346-11	CERAMIC CHIP 1uF	16V (TR730E/TR840E/TR845E)
C373	1-164-156-11	CERAMIC CHIP 0.1uF	25V (TR730E/TR840E/TR845E)
C375	1-164-346-11	CERAMIC CHIP 1uF	16V (TR730E/TR840E/TR845E)
C376	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C377	1-162-960-11	CERAMIC CHIP 220PF 10%	50V
C378	1-165-128-11	CERAMIC CHIP 0.22uF	16V (TR730E/TR840E/TR845E)
		< CONNECTOR >	
* CN301	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P	
* CN302	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P	(TR730E/TR840E/TR845E)
CN303	1-779-334-11	CONNECTOR, FFC/FPC 20P	
		< DIODE >	
D302	8-749-060-65	DIODE DCC3810	(EXCEPT TR311/TR311E/TR411E/TR412E)
D303	8-719-061-82	DIODE TLSU1002(TPX1,SONY)	
D305	8-719-404-49	DIODE MA111-TX	(EXCEPT TR311/TR311E/TR411E)
D309	8-719-067-44	DIODE CL-310IRS-X-TU	(EXCEPT TR311/TR311E/TR411E/TR412E)
D321	8-719-420-14	DIODE MA8082-TX	(TR730E/TR840E/TR845E)
D322	8-719-420-14	DIODE MA8082-TX	
D323	8-719-404-49	DIODE MA111-TX	(TR730E/TR840E/TR845E)
		< FUSE >	
⚠F301	1-533-874-11	FUSE, MICRO (200mA/24V)	(EXCEPT TR311/TR311E/TR411E/TR412E)
		< IC >	
IC301	8-749-012-83	IC RS-180-T (R)	(EXCEPT TR311/TR311E/TR411E)
IC321	8-759-339-63	IC NJM2118V-TE2	(EXCEPT TR730E/TR840E/TR845E)
IC322	8-759-248-31	IC BA7780KV-E2	(TR730E/TR840E/TR845E)
		< JACK >	
J301	1-568-027-11	JACK, SMALL TYPE (MIC)	(EXCEPT TR730E/TR840E/TR845E)
J301	1-691-737-11	JACK (SMALL TYPE)(MIC)	(TR730E/TR840E/TR845E)
		< COIL >	
L301	1-216-295-91	SHORT 0	(EXCEPT TR311/TR311E/TR411E/TR412E)
		< TRANSISTOR >	
Q301	8-729-422-51	TRANSISTOR UN5110-QRS-TX	(EXCEPT TR311/TR311E/TR411E/TR412E)
Q303	8-729-140-75	TRANSISTOR 2SD999-T1-CLCK	(EXCEPT TR311/TR311E/TR411E/TR412E)
Q304	8-729-402-42	TRANSISTOR UN5213-TX	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

MA-311

Ref. No.	Part No.	Description	Remark
Q305	8-729-402-42	TRANSISTOR UN5213-TX	(EXCEPT TR311/TR311E/TR411E/TR412E)
Q321	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	(EXCEPT TR730E/TR840E/TR845E)
Q322	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX	(EXCEPT TR730E/TR840E/TR845E)
		< RESISTOR >	
R303	1-216-817-11	METAL CHIP 470 5% 1/16W	(EXCEPT TR311/TR311E/TR411E/TR412E)
R304	1-216-309-00	METAL CHIP 5.6 5% 1/10W	(EXCEPT TR311/TR311E/TR411E/TR412E)
R305	1-216-302-00	METAL CHIP 2.7 5% 1/10W	(EXCEPT TR311/TR311E/TR411E/TR412E)
R306	1-216-864-11	METAL CHIP 0 5% 1/16W	
R310	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	
R311	1-216-805-11	METAL CHIP 47 5% 1/16W	(EXCEPT TR311/TR311E/TR411E)
R313	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TR311/TR311E/TR411E/TR412E)
R314	1-216-815-11	METAL CHIP 330 5% 1/16W	(EXCEPT TR311/TR311E/TR411E/TR412E)
R321	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR730E/TR840E/TR845E)
R322	1-216-864-11	METAL CHIP 0 5% 1/16W	
R323	1-216-864-11	METAL CHIP 0 5% 1/16W	
R324	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR730E/TR840E/TR845E)
R325	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	(EXCEPT TR730E/TR840E/TR845E)
R326	1-216-817-11	METAL CHIP 470 5% 1/16W	(EXCEPT TR730E/TR840E/TR845E)
R327	1-216-841-11	METAL CHIP 47K 5% 1/16W	(EXCEPT TR730E/TR840E/TR845E)
R328	1-216-841-11	METAL CHIP 47K 5% 1/16W	(EXCEPT TR730E/TR840E/TR845E)
R329	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(EXCEPT TR730E/TR840E/TR845E)
R330	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	(EXCEPT TR730E/TR840E/TR845E)
R331	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(EXCEPT TR730E/TR840E/TR845E)
R332	1-216-803-11	METAL CHIP 33 5% 1/16W	(EXCEPT TR730E/TR840E/TR845E)
R333	1-216-838-11	METAL CHIP 27K 5% 1/16W	(EXCEPT TR730E/TR840E/TR845E)
R334	1-216-838-11	METAL CHIP 27K 5% 1/16W	(EXCEPT TR730E/TR840E/TR845E)
R335	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR730E/TR840E/TR845E)
R336	1-216-836-11	METAL CHIP 18K 5% 1/16W	(TR730E/TR840E/TR845E)
R337	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR730E/TR840E/TR845E)
R338	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR730E/TR840E/TR845E)
R339	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR730E/TR840E/TR845E)
R340	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR730E/TR840E/TR845E)
R341	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR730E/TR840E/TR845E)
R342	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR730E/TR840E/TR845E)
R343	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR730E/TR840E/TR845E)
R344	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR730E/TR840E/TR845E)
R345	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TR730E/TR840E/TR845E)
R346	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TR730E/TR840E/TR845E)
R347	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR730E/TR840E/TR845E)
R348	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR730E/TR840E/TR845E)
R349	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR730E/TR840E/TR845E)
R350	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR730E/TR840E/TR845E)
R351	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR730E/TR840E/TR845E)
R352	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR730E/TR840E/TR845E)
R353	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR730E/TR840E/TR845E)
R354	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TR730E/TR840E/TR845E)
R355	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TR730E/TR840E/TR845E)
R356	1-216-864-11	METAL CHIP 0 5% 1/16W	(TR730E/TR840E/TR845E)
R357	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TR730E/TR840E/TR845E)
R358	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR730E/TR840E/TR845E)
R359	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR730E/TR840E/TR845E)
R360	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR730E/TR840E/TR845E)
R361	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR730E/TR840E/TR845E)
R362	1-216-835-11	METAL CHIP 15K 5% 1/16W	(TR730E/TR840E/TR845E)
R363	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	(TR730E/TR840E/TR845E)
R364	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR730E/TR840E/TR845E)
R365	1-216-834-11	METAL CHIP 12K 5% 1/16W	(TR730E/TR840E/TR845E)
R366	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TR730E/TR840E/TR845E)
R367	1-216-818-11	METAL CHIP 560 5% 1/16W	(TR730E/TR840E/TR845E)
R368	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	(TR730E/TR840E/TR845E)
		< SWITCH >	
S302	1-771-040-21	SWITCH, PUSH (POWER (PLAYER/VTR))	
S303	1-771-039-11	SWITCH, PUSH (POWER (CAMERA))	

Ref. No.	Part No.	Description	Remark
	A-7073-422-A	PJ-81(M) BOARD, COMPLETE ************************* (EXCEPT TR730E/TR840E/TR845E)	
	A-7073-426-A	PJ-81(H) BOARD, COMPLETE (TR840E/TR845E) *************************	
	A-7073-543-A	PJ-81(S) BOARD, COMPLETE (TR730E) ************************* (Ref. No. 3,000 Series)	
		< CAPACITOR >	
C101	1-110-569-11	TANTAL. CHIP 47uF 20%	6.3V
		< CONNECTOR >	
* CN101	1-764-521-11	CONNECTOR, FFC/FPC (ZIF) 12P	
		< DIODE >	
D101	8-719-059-57	DIODE MAZJ082DFLSO (TR730E/TR840E/TR845E)	
D102	8-719-059-57	DIODE MAZJ082DFLSO	
D103	8-719-059-57	DIODE MAZJ082DFLSO	
D104	8-719-420-14	DIODE MA8082-TX (TR840E/TR845E)	
D105	8-719-059-57	DIODE MAZJ082DFLSO (TR840E/TR845E)	
D106	8-719-059-57	DIODE MAZJ082DFLSO (TR840E/TR845E)	
		< JACK >	
J101	1-537-747-21	TERMINAL BOARD (S VIDEO, VIDEO, AUDIO RFU DC OUT) (TR840E/TR845E)	
J101	1-537-747-31	TERMINAL BOARD (VIDEO, AUDIO, RFU DC OUT) (TR730E)	
J101	1-537-747-41	TERMINAL BOARD (VIDEO, AUDIO, RFU DC OUT) (EXCEPT TR730E/TR840E/TR845E)	
		< COIL >	
L101	1-414-072-11	INDUCTOR 1uH	
L102	1-216-295-91	SHORT 0	
L103	1-216-295-91	SHORT 0 (TR730E/TR840E/TR845E)	
L104	1-216-295-91	SHORT 0 (TR730E/TR840E/TR845E)	
		< TRANSISTOR >	
Q101	8-729-101-07	TRANSISTOR 2SB798-T1-DLDK	
Q102	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
		< RESISTOR >	
R101	1-216-864-11	METAL CHIP 0 5%	1/16W
R102	1-216-138-00	METAL CHIP 3.3 5%	1/8W
R103	1-216-830-11	METAL CHIP 5.6K 5%	1/16W
R104	1-216-820-11	METAL CHIP 820 5%	1/16W
R105	1-216-836-11	METAL CHIP 18K 5%	1/16W
R106	1-216-864-11	METAL CHIP 0 5% (TR840E/TR845E)	1/16W
R107	1-216-864-11	METAL CHIP 0 5% (TR840E/TR845E)	1/16W
R108	1-216-821-11	METAL CHIP 1K 5% (TR840E/TR845E)	1/16W
R109	1-216-821-11	METAL CHIP 1K 5%	1/16W

Ref. No.	Part No.	Description	Remark
	A-7073-423-A	SE-65(MM) BOARD, COMPLETE (TR640E) *************************	
	A-7073-427-A	SE-65(H) BOARD, COMPLETE ************************* (TR730E/TR840E/TR845E)	
		< CAPACITOR >	
C451	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C452	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V
C453	1-104-847-11	TANTAL. CHIP 22uF 20%	4V
C454	1-104-847-11	TANTAL. CHIP 22uF 20%	4V
C457	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C458	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C459	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C460	1-110-666-11	ELECT CHIP 22uF 20%	6.3V
C461	1-164-343-11	CERAMIC CHIP 0.056uF 10%	25V
C462	1-110-666-11	ELECT CHIP 22uF 20%	6.3V
C464	1-110-501-11	CERAMIC CHIP 0.33uF 10%	16V
C465	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
C466	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
		< CONNECTOR >	
CN451	1-691-348-11	CONNECTOR, FFC/FPC (ZIF) 10P	
	< DIODE >		
D451	8-719-059-57	DIODE MAZJ082DFLSO (TR730E/TR840E/TR845E)	
D452	8-719-059-57	DIODE MAZJ082DFLSO (TR730E/TR840E/TR845E)	
		< IC >	
IC451	8-759-489-19	IC uPC6756GR-8JG-E2	
		< JACK >	
J451	1-695-514-21	JACK (SMALL TYPE) 1P (🎧) (TR730E/TR840E/TR845E)	
		< COIL >	
L451	1-414-754-11	INDUCTOR 10uH	
L453	1-216-295-91	SHORT 0 (TR730E/TR840E/TR845E)	
L454	1-216-295-91	SHORT 0 (TR730E/TR840E/TR845E)	
		< RESISTOR >	
R451	1-216-837-11	METAL CHIP 22K 5%	1/16W
R452	1-216-837-11	METAL CHIP 22K 5%	1/16W
R453	1-216-837-11	METAL CHIP 22K 5%	1/16W
R454	1-216-837-11	METAL CHIP 22K 5%	1/16W
R455	1-216-864-11	METAL CHIP 0 5%	1/16W
R456	1-216-857-11	METAL CHIP 1M 5%	1/16W
R458	1-216-833-11	METAL CHIP 10K 5%	1/16W
R459	1-216-857-11	METAL CHIP 1M 5%	1/16W
R461	1-216-835-11	METAL CHIP 15K 5%	1/16W
R463	1-216-809-11	METAL CHIP 100 5%	1/16W
		< SENSOR >	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW)	

Ref. No.	Part No.	Description	Remark
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH)	
	A-7093-440-A	VC-195(7ZCBU) BOARD, COMPLETE (TR311) ******************************	
	A-7093-442-A	VC-195 (HOGP) BOARD, COMPLETE ******************************	(TR840E:AUS)
	A-7093-443-A	VC-195(MCROP) BOARD, COMPLETE (TR730E) ******************************	
	A-7093-444-A	VC-195(ZCOP) BOARD, COMPLETE (TR512E) *****************************	
	A-7093-445-A	VC-195 (HODE) BOARD, COMPLETE (TR845E) ******************************	
	A-7093-446-A	VC-195(H0E) BOARD, COMPLETE *****************************	(TR840E:AEP,UK,EE,NE,RU)
	A-7093-447-A	VC-195(MMOE) BOARD, COMPLETE (TR640E) *****************************	
	A-7093-448-A	VC-195(ZOE) BOARD, COMPLETE *****************************	(TR311E/TR411E/TR412E/TR511E) (Ref. No. 1,000 Series)
		< CAPACITOR >	
C001	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C004	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C006	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C007	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C008	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C009	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C010	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C011	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C012	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C017	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C018	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C019	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C021	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C022	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C023	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C024	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C026	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C027	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C028	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C029	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C030	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C031	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C032	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C033	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C034	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C035	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	
C036	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C037	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C039	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C041	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C042	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C043	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C047	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TR845E)
C048	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C049	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C050	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C052	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C053	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C055	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C058	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C059	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C060	1-163-809-11	CERAMIC CHIP 0.047uF 10% 25V	
C061	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C062	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C065	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C068	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C069	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C070	1-162-908-11	CERAMIC CHIP 3PF 0.25PF 50V	
C071	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C072	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	
C073	1-164-392-11	CERAMIC CHIP 390PF 5% 50V	
C074	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	(TR840E/TR845E)
C075	1-162-959-11	CERAMIC CHIP 330PF 5% 50V	(TR730E/TR840E/TR845E)
C075	1-164-315-11	CERAMIC CHIP 470PF 5% 50V	(EXCEPT TR730E/TR840E/TR845E)
C076	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(TR840E/TR845E)
C078	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	
C079	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(TR840E/TR845E)
C080	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	(TR840E/TR845E)
C080	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(EXCEPT TR840E/TR845E)
C081	1-162-916-11	CERAMIC CHIP 12PF 5% 50V	
C082	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C083	1-162-924-11	CERAMIC CHIP 56PF 5% 50V	(EXCEPT TR311)
C083	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	(TR311)
C085	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C086	1-115-156-11	CERAMIC CHIP 1uF 10V	
C088	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	(EXCEPT TR840E/TR845E)
C088	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	(TR840E/TR845E)
C089	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(EXCEPT TR730E/TR840E/TR845E)
C089	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	(TR840E/TR845E)
C089	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	(TR730E)
C090	1-162-958-11	CERAMIC CHIP 270PF 5% 50V	
C152	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C156	1-164-677-11	CERAMIC CHIP 0.033uF 10% 16V	

Ref. No.	Part No.	Description			Remark
C157	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR840E:AUS)
C158	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C159	1-164-346-11	CERAMIC CHIP	1uF		16V
C160	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C161	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C162	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V (TR840E:AUS)
C163	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V
C164	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR840E:AUS)
C166	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C168	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (EXCEPT TR311)
C168	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V (TR311)
C169	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C170	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C171	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR840E:AUS)
C172	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V (TR840E:AUS)
C173	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V (TR840E:AUS)
C174	1-162-928-11	CERAMIC CHIP	120PF	5%	50V (TR840E:AUS)
C175	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR840E:AUS)
C177	1-162-927-11	CERAMIC CHIP	100PF	5%	50V (TR840E:AUS)
C178	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR840E:AUS)
C179	1-162-919-11	CERAMIC CHIP	22PF	5%	50V (TR840E:AUS)
C180	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C181	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR840E/TR845E)
C182	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C183	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V (TR840E/TR845E)
C184	1-115-156-11	CERAMIC CHIP	1uF		10V (EXCEPT TR311)
C184	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR311)
C185	1-126-246-11	ELECT CHIP	220uF	20%	4V
C186	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V (TR311)
C187	1-126-246-11	ELECT CHIP	220uF	20%	4V (TR840E/TR845E)
C188	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C190	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C191	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C192	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
C202	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C204	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C205	1-115-156-11	CERAMIC CHIP	1uF		10V
C206	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C207	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C209	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V (TR840E/TR845E)

Ref. No.	Part No.	Description			Remark
C209	1-162-921-11	CERAMIC CHIP	33PF	5%	50V (EXCEPT TR840E/TR845E)
C210	1-162-922-11	CERAMIC CHIP	39PF	5%	50V (TR840E/TR845E)
C211	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C212	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C217	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C218	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C219	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C224	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C225	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C226	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C227	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C229	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C230	1-115-156-11	CERAMIC CHIP	1uF		10V
C232	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C233	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C234	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C235	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C237	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C239	1-115-156-11	CERAMIC CHIP	1uF		10V
C243	1-115-156-11	CERAMIC CHIP	1uF		10V (TR840E/TR845E)
C243	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR730E)
C244	1-115-156-11	CERAMIC CHIP	1uF		10V (TR730E/TR840E/TR845E)
C245	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C246	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C247	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C250	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C252	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V (TR730E)
C301	1-135-201-11	TANTALUM CHIP	10uF	20%	4V
C302	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TR730E/TR840E/TR845E)
C307	1-135-151-21	TANTALUM CHIP	4.7uF	20%	4V
C308	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C309	1-135-318-11	TANTAL. CHIP	33uF	20%	4V
C310	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C312	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C313	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V (TR730E/TR840E/TR845E)
C316	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C317	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V (TR730E/TR840E/TR845E)
C318	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C319	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C320	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C321	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V (TR730E/TR840E/TR845E)
C322	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR730E/TR840E/TR845E)
C324	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (TR730E/TR840E/TR845E)
C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (EXCEPT TR730E/TR840E/TR845E)
C326	1-109-982-11	CERAMIC CHIP	1uF	10%	10V

Ref. No.	Part No.	Description				Remark
C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR730E/TR840E/TR845E)
C328	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C330	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	(TR730E/TR840E/TR845E)
C331	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	(TR730E/TR840E/TR845E)
C332	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C333	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C334	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	(TR730E/TR840E/TR845E)
C335	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	
C336	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	(TR730E/TR840E/TR845E)
C337	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C338	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C339	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	(TR730E/TR840E/TR845E)
C340	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C341	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	(TR730E/TR840E/TR845E)
C342	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C344	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TR730E/TR840E/TR845E)
C346	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C347	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C349	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C371	1-104-908-11	TANTAL. CHIP	47uF	20%	4V	(TR730E/TR840E/TR845E)
C372	1-104-908-11	TANTAL. CHIP	47uF	20%	4V	
C402	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C404	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	
C405	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	
C406	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C410	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C411	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C412	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C414	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C415	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C416	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C417	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C418	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C419	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C451	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C452	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C453	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C454	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C455	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C456	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C457	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C458	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C459	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C460	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C461	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C462	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C463	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C464	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C465	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C467	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C468	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C469	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C470	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C471	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C472	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C473	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C474	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C475	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C476	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C478	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C480	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V	
C483	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C484	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C485	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C486	1-164-156-11	CERAMIC CHIP	0.1uF		25V	
C487	1-162-957-11	CERAMIC CHIP	220PF	5%	50V	
C488	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C489	1-162-962-11	CERAMIC CHIP	470PF	10%	50V	
C501	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C502	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C503	1-162-919-11	CERAMIC CHIP	22PF	5%	50V	
C504	1-162-922-11	CERAMIC CHIP	39PF	5%	50V	
C506	1-115-156-11	CERAMIC CHIP	1uF		10V	
C507	1-115-156-11	CERAMIC CHIP	1uF		10V	
C508	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C509	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V	
C510	1-135-201-11	TANTALUM CHIP	10uF	20%	4V	
C511	1-164-232-11	CERAMIC CHIP	0.01uF		50V	
C512	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C513	1-115-156-11	CERAMIC CHIP	1uF		10V	
C514	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C515	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	
C516	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C517	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	
C518	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	
C519	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C520	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C521	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C522	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C523	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V	
C524	1-162-962-11	CERAMIC CHIP	470PF	10%	50V	
C525	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C526	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C527	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C528	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C529	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C530	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C531	1-104-847-11	TANTAL. CHIP	22uF	20%	4V	
C532	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	(TR840E:AUS)
C533	1-162-917-11	CERAMIC CHIP	15PF	5%	50V	(TR840E:AUS)
C552	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	
C553	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C554	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	

Ref. No.	Part No.	Description			Remark
C555	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C556	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C557	1-162-962-11	CERAMIC CHIP	470PF	10%	50V
C558	1-115-467-11	CERAMIC CHIP	0.22uF	10%	10V
C559	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C560	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C561	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C562	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C563	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C564	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C565	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C566	1-115-156-11	CERAMIC CHIP	1uF		10V
C567	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C569	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C570	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C571	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C572	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C607	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C610	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C611	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C612	1-119-749-11	TANTAL. CHIP	33uF	20%	4V
C613	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C615	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C616	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C617	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C618	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C619	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C620	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C621	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C622	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C623	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C624	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C625	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C626	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C627	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C628	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C629	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C630	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C634	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR730E/TR840E/TR845E)
C636	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C637	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C702	1-115-156-11	CERAMIC CHIP	1uF		10V (TR845E)
C703	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR845E)
C704	1-162-924-11	CERAMIC CHIP	56PF	5%	50V (TR845E)
C705	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR845E)
C706	1-162-923-11	CERAMIC CHIP	47PF	5%	50V (TR845E)
C707	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V (TR845E)
C708	1-162-925-11	CERAMIC CHIP	68PF	5%	50V (TR845E)
C709	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR845E)
C710	1-135-201-11	TANTALUM CHIP	10uF	20%	4V (TR845E)
C711	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR845E)
C712	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TR845E)
C713	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (TR845E)
C714	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TR845E)
C715	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR845E)
C716	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TR845E)
		< CONNECTOR >			
CN001	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P			
CN501	1-779-332-11	CONNECTOR, FFC/FPC 16P			
CN551	1-766-353-21	CONNECTOR, FFC/FPC 23P			
CN901	1-766-644-21	CONNECTOR, FFC/FPC 8P			
CN902	1-766-673-21	CONNECTOR, FFC/FPC 12P			
CN903	1-766-353-21	CONNECTOR, FFC/FPC 23P			
CN904	1-691-374-11	CONNECTOR, FFC/FPC 10P			
CN905	1-766-646-21	CONNECTOR, FFC/FPC 10P			
CN906	1-766-673-21	CONNECTOR, FFC/FPC 12P			
CN907	1-766-346-21	CONNECTOR, FFC/FPC 16P			
CN908	1-766-345-21	CONNECTOR, FFC/FPC 15P			
CN909	1-766-621-21	CONNECTOR, FFC/FPC 10P			(TR730E/TR840E/TR845E)
CN910	1-766-346-21	CONNECTOR, FFC/FPC 16P			
CN911	1-778-637-21	CONNECTOR, FFC/FPC (ZIF) 50P			
CN912	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P			
CN914	1-691-542-21	CONNECTOR, BOARD TO BOARD 48P			
		< DIODE >			
D002	8-719-404-49	DIODE	MA111-TX		(TR840E/TR845E)
D201	8-719-055-86	DIODE	KV1470TL1-3		
D202	8-719-055-86	DIODE	KV1470TL1-3		
D502	8-713-102-28	DIODE	1T379-04-T8A		
D551	8-719-404-49	DIODE	MA111-TX		
D601	8-719-421-27	DIODE	MA728-TX		
D602	8-719-421-27	DIODE	MA728-TX		
D604	8-719-404-49	DIODE	MA111-TX		
D608	8-719-404-49	DIODE	MA111-TX		
D609	8-719-049-09	DIODE	1SS367-T3SONY		
D610	8-719-421-27	DIODE	MA728-TX		
D910	8-719-059-57	DIODE	MAZJ082DFLSO		(TR730E/TR840E/TR845E)
D911	8-719-420-14	DIODE	MA8082-TX		(TR730E/TR840E/TR845E)
		< FERRITE BEAD >			
FB001	1-414-229-11	INDUCTOR CHIP	0UH		
FB002	1-414-229-11	INDUCTOR CHIP	0UH		
FB003	1-414-229-11	INDUCTOR CHIP	0UH		
FB004	1-414-229-11	INDUCTOR CHIP	0UH		
FB151	1-414-228-11	INDUCTOR CHIP	0UH		
FB152	1-414-921-11	INDUCTOR CHIP	0UH		
FB201	1-414-228-11	INDUCTOR CHIP	0UH		

VC-195

Ref. No.	Part No.	Description	Remark
FB202	1-414-228-11	INDUCTOR CHIP 0UH	
FB203	1-414-228-11	INDUCTOR CHIP 0UH	
FB204	1-414-228-11	INDUCTOR CHIP 0UH	(TR730E/TR840E/TR845E)
FB205	1-414-228-11	INDUCTOR CHIP 0UH	(TR730E/TR840E/TR845E)
FB206	1-414-228-11	INDUCTOR CHIP 0UH	
FB501	1-414-228-11	INDUCTOR CHIP 0UH	
FB503	1-500-284-21	INDUCTOR CHIP 0UH	
FB504	1-500-284-21	INDUCTOR CHIP 0UH	
FB505	1-500-284-21	INDUCTOR CHIP 0UH	(EXCEPT TR640E/TR730E/TR840E/TR845E)
FB506	1-414-228-11	INDUCTOR CHIP 0UH	
FB701	1-414-228-11	INDUCTOR CHIP 0UH	(TR845E)
FB702	1-414-921-11	INDUCTOR CHIP 0UH	(TR845E)
		< IC >	
IC001	8-752-079-46	IC CXA2084R-T6	
IC151	8-752-078-82	IC CXA2030R-T6	(EXCEPT TR311)
IC151	8-759-357-63	IC AN2220FH-EB	(TR311)
IC152	8-759-169-02	IC MB88344BPFV-G-BND-ER	
IC201	8-759-494-73	IC MB90097PFV-G-104-ER	
IC202	8-759-494-55	IC MB87F126DPFF-G-BND	
IC204	8-752-389-54	IC CXD3124R-T6	(TR840E/TR845E)
IC204	8-752-390-53	IC CXD3131R-T6	(TR730E)
IC301	8-759-494-29	IC AN2982FH-EB	(TR730E/TR840E/TR845E)
IC301	8-759-494-30	IC AN2984FH-EB	(EXCEPT TR730E/TR840E/TR845E)
IC401	8-759-445-94	IC AK6480AM-E2	
IC402	8-759-499-08	IC MB91191PFF-G-105-ER	
IC451	8-759-327-67	IC LB1950V-TLM	
IC452	8-759-327-61	IC LB8112V-TLM	(TR311)
IC452	8-759-327-62	IC TA8482FN-EL	(EXCEPT TR311)
IC501	8-752-384-70	IC CXD2486R-T4	
IC502	8-759-462-43	IC AD9800JCSTRL	
IC551	8-759-444-87	IC NJM324V(TE2)	
IC552	8-759-351-46	IC MPC17A34RVMEL	(TR311)
IC552	8-759-475-79	IC uPD16833AG3-E2	(EXCEPT TR311)
IC602	8-759-424-79	IC S-8423YFS-T2	
IC603	8-759-059-05	IC TL1596CPW-ELM1000	
IC604	8-759-494-75	IC S579212PZ-TEB	(EXCEPT TR311/TR730E/840E)
IC604	8-759-527-99	IC S579213PZ-TEB	(TR311/TR730E/TR840E)
IC701	8-759-421-52	IC MB87B110CPF-G-BND-ER	(TR845E)
		< COIL >	
L001	1-414-406-11	INDUCTOR 220uH	
L002	1-412-952-11	INDUCTOR 12uH	
L003	1-414-406-11	INDUCTOR 220uH	
L004	1-414-754-11	INDUCTOR 10uH	
L005	1-412-948-11	INDUCTOR 5.6uH	
L006	1-412-963-11	INDUCTOR 100uH	
L008	1-412-280-31	INDUCTOR 330uH	
L009	1-410-656-11	INDUCTOR CHIP 150uH	
L010	1-410-657-21	INDUCTOR CHIP 180uH	
L011	1-412-956-21	INDUCTOR 27uH	(TR840E/TR845E)
L012	1-412-955-11	INDUCTOR 22uH	
L013	1-412-944-11	INDUCTOR 2.7uH	
L015	1-412-951-11	INDUCTOR 10uH	

Ref. No.	Part No.	Description	Remark
L016	1-412-946-11	INDUCTOR 3.9uH	
L017	1-414-754-11	INDUCTOR 10uH	
L018	1-410-656-11	INDUCTOR CHIP 150uH	
L019	1-412-957-11	INDUCTOR 33uH	
L152	1-412-937-11	INDUCTOR 0.68uH	(TR840E:AUS)
L153	1-414-754-11	INDUCTOR 10uH	
L154	1-414-754-11	INDUCTOR 10uH	
L155	1-414-754-11	INDUCTOR 10uH	
L156	1-414-754-11	INDUCTOR 10uH	
L201	1-414-754-11	INDUCTOR 10uH	
L202	1-414-754-11	INDUCTOR 10uH	
L203	1-414-754-11	INDUCTOR 10uH	
L204	1-410-658-31	INDUCTOR CHIP 220uH	
L205	1-412-955-11	INDUCTOR 22uH	(TR840E/TR845E)
L205	1-412-957-11	INDUCTOR 33uH	(EXCEPT TR840E/TR845E)
L206	1-412-945-11	INDUCTOR 3.3uH	
L207	1-414-754-11	INDUCTOR 10uH	
L209	1-414-754-11	INDUCTOR 10uH	
L402	1-414-754-11	INDUCTOR 10uH	
L501	1-414-398-11	INDUCTOR 10uH	
L502	1-216-295-91	SHORT 0	(EXCEPT TR840E:AUS)
L502	1-412-955-11	INDUCTOR 22uH	(TR840E:AUS)
L552	1-414-398-11	INDUCTOR 10uH	
L553	1-414-754-11	INDUCTOR 10uH	
L555	1-414-754-11	INDUCTOR 10uH	
L602	1-414-754-11	INDUCTOR 10uH	
L701	1-414-754-11	INDUCTOR 10uH	(TR845E)
L702	1-412-950-11	INDUCTOR 8.2uH	(TR845E)
L704	1-410-658-31	INDUCTOR CHIP 220uH	(TR845E)
		< TRANSISTOR >	
Q001	8-729-031-69	TRANSISTOR 2SA1965-TL	
Q002	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q003	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q012	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q017	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q018	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	(TR845E)
Q019	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q020	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q021	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q022	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	(TR840E/TR845E)
Q023	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q024	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8).SO	
Q025	8-729-037-89	TRANSISTOR 2SC4627J-C(K8)	(TR840E/TR845E)
Q027	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q028	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	
Q029	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q030	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	(TR840E/TR845E)
Q032	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q033	8-729-031-69	TRANSISTOR 2SA1965-TL	
Q034	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8).SO	
Q036	8-729-037-89	TRANSISTOR 2SC4627J-C(K8).	
Q038	8-729-037-74	TRANSISTOR UN9213J-(K8).SO	

Ref. No.	Part No.	Description		Remark
Q039	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	
Q040	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q041	8-729-230-72	TRANSISTOR	2SA1362-(YG)-EL	
Q042	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q043	8-729-031-69	TRANSISTOR	2SA1965-TL	(TR840E/TR845E)
Q044	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	(TR840E/TR845E)
Q151	8-729-037-61	TRANSISTOR	UN9113J-(K8).SO	
Q153	8-729-040-77	TRANSISTOR	2SC5376-B(TE85L)	
Q154	8-729-040-77	TRANSISTOR	2SC5376-B(TE85L)	(TR840E/TR845E)
Q156	8-729-040-77	TRANSISTOR	2SC5376-B(TE85L)	(TR840E/TR845E)
Q202	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	
Q203	8-729-037-53	TRANSISTOR	2SB1462J-QR(K8).SO	
Q204	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	
Q205	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q208	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	(TR840E/TR845E)
Q213	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	(TR311/TR512E/TR730E)
Q214	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	(TR311/TR512E/TR730E)
Q215	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	
Q216	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	(TR311/TR512E/TR730E)
Q217	8-729-037-53	TRANSISTOR	2SB1462J-QR(K8).SO	
Q301	8-729-042-74	TRANSISTOR	UN9216J-(K8).SO	(TR730E/TR840E/TR845E)
Q302	8-729-042-74	TRANSISTOR	UN9216J-(K8).SO	
Q305	8-729-037-63	TRANSISTOR	UN9115J-(K8).SO	
Q306	8-729-037-76	TRANSISTOR	UN9215J-(K8).SO	
Q307	8-729-037-76	TRANSISTOR	UN9215J-(K8).SO	(TR730E/TR840E/TR845E)
Q308	8-729-037-61	TRANSISTOR	UN9113J-(K8).SO	
Q309	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q371	8-729-042-74	TRANSISTOR	UN9216J-(K8).SO	
Q372	8-729-042-74	TRANSISTOR	UN9216J-(K8).SO	(TR730E/TR840E/TR845E)
Q452	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q453	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q454	8-729-037-53	TRANSISTOR	2SB1462J-QR(K8).SO	
Q455	8-729-037-53	TRANSISTOR	2SB1462J-QR(K8).SO	
Q456	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	
Q501	8-729-037-53	TRANSISTOR	2SB1462J-QR(K8).SO	
Q551	8-729-037-53	TRANSISTOR	2SB1462J-QR(K8).SO	
Q552	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	
Q553	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	
Q607	8-729-041-43	TRANSISTOR	HN1L02FU(TE85R)	
Q610	8-729-037-74	TRANSISTOR	UN9213J-(K8).SO	
Q619	8-729-037-53	TRANSISTOR	2SB1462J-QR(K8).SO	(TR730E/TR840E/TR845E)
Q620	8-729-042-58	TRANSISTOR	UN9111J-(K8).SO	
Q701	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	(TR845E)
Q702	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	(TR845E)
Q703	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	(TR845E)
Q704	8-729-037-61	TRANSISTOR	UN9113J-(K8).SO	(TR845E)
Q705	8-729-037-52	TRANSISTOR	2SD2216J-QR(K8).SO	(TR845E)

Ref. No.	Part No.	Description			Remark
		< RESISTOR >			
R001	1-216-864-11	METAL CHIP	0	5%	1/16W
R002	1-216-864-11	METAL CHIP	0	5%	1/16W
R003	1-216-806-11	RES,CHIP	56	5%	1/16W
R004	1-216-818-11	METAL CHIP	560	5%	1/16W
R005	1-216-809-11	METAL CHIP	100	5%	1/16W
R006	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R007	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R008	1-216-814-11	METAL CHIP	270	5%	1/16W
R009	1-216-813-11	METAL CHIP	220	5%	1/16W
R014	1-216-837-11	METAL CHIP	22K	5%	1/16W
R015	1-216-839-11	METAL CHIP	33K	5%	1/16W
R020	1-216-837-11	METAL CHIP	22K	5%	1/16W
R021	1-216-837-11	METAL CHIP	22K	5%	1/16W
R023	1-216-837-11	METAL CHIP	22K	5%	1/16W
R025	1-216-837-11	METAL CHIP	22K	5%	1/16W
R026	1-216-816-11	METAL CHIP	390	5%	1/16W
R027	1-216-816-11	METAL CHIP	390	5%	1/16W
R029	1-216-837-11	METAL CHIP	22K	5%	1/16W
R031	1-216-837-11	METAL CHIP	22K	5%	1/16W
R032	1-216-816-11	METAL CHIP	390	5%	1/16W
R033	1-216-816-11	METAL CHIP	390	5%	1/16W
R034	1-216-864-11	METAL CHIP	0	5%	1/16W (EXCEPT 845E)
R035	1-216-841-11	METAL CHIP	47K	5%	1/16W
R037	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R038	1-216-841-11	METAL CHIP	47K	5%	1/16W
R039	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R040	1-216-864-11	METAL CHIP	0	5%	1/16W
R043	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR840E/TR845E)
R045	1-216-845-11	METAL CHIP	100K	5%	1/16W
R046	1-216-821-11	METAL CHIP	1K	5%	1/16W
R047	1-216-864-11	METAL CHIP	0	5%	1/16W (EXCEPT 845E)
R048	1-216-864-11	METAL CHIP	0	5%	1/16W (EXCEPT 845E)
R049	1-216-833-11	METAL CHIP	10K	5%	1/16W
R050	1-216-837-11	METAL CHIP	22K	5%	1/16W
R051	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R052	1-216-833-11	METAL CHIP	10K	5%	1/16W
R055	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR311)
R055	1-216-830-11	METAL CHIP	5.6K	5%	1/16W (EXCEPT TR311)
R056	1-216-855-11	METAL CHIP	680K	5%	1/16W
R057	1-216-819-11	METAL CHIP	680	5%	1/16W (TR840E/TR845E)
R057	1-216-864-11	METAL CHIP	0	5%	1/16W (EXCEPT TR840E/TR845E)
R058	1-216-853-11	METAL CHIP	470K	5%	1/16W
R059	1-216-821-11	METAL CHIP	1K	5%	1/16W
R060	1-216-837-11	METAL CHIP	22K	5%	1/16W
R061	1-216-833-11	METAL CHIP	10K	5%	1/16W
R062	1-216-818-11	METAL CHIP	560	5%	1/16W
R063	1-216-817-11	METAL CHIP	470	5%	1/16W (TR840E/TR845E)
R063	1-216-818-11	METAL CHIP	560	5%	1/16W (EXCEPT TR840E/TR845E)

Ref. No.	Part No.	Description				Remark
R064	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	(TR840E/TR845E)
R064	1-216-864-11	METAL CHIP	0	5%	1/16W	(EXCEPT TR840E/TR845E)
R065	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TR840E/TR845E)
R066	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	(EXCEPT TR311)
R066	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	(TR311)
R067	1-216-817-11	METAL CHIP	470	5%	1/16W	
R068	1-216-817-11	METAL CHIP	470	5%	1/16W	
R069	1-216-864-11	METAL CHIP	0	5%	1/16W	
R072	1-216-864-11	METAL CHIP	0	5%	1/16W	
R073	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R074	1-216-816-11	METAL CHIP	390	5%	1/16W	
R075	1-216-817-11	METAL CHIP	470	5%	1/16W	
R076	1-216-816-11	METAL CHIP	390	5%	1/16W	
R077	1-216-814-11	METAL CHIP	270	5%	1/16W	(EXCEPT TR311/TR840E/TR845E)
R077	1-216-815-11	METAL CHIP	330	5%	1/16W	(TR311)
R078	1-216-817-11	METAL CHIP	470	5%	1/16W	(TR840E/TR845E)
R079	1-216-817-11	METAL CHIP	470	5%	1/16W	(TR840E/TR845E)
R080	1-216-821-11	METAL CHIP	1K	5%	1/16W	(TR840E/TR845E)
R081	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R082	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R083	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR840E/TR845E)
R085	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R087	1-216-821-11	METAL CHIP	1K	5%	1/16W	(TR840E/TR845E)
R088	1-216-864-11	METAL CHIP	0	5%	1/16W	(TR840E/TR845E)
R092	1-216-809-11	METAL CHIP	100	5%	1/16W	
R093	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R094	1-216-814-11	METAL CHIP	270	5%	1/16W	(TR840E/TR845E)
R095	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R096	1-216-813-11	METAL CHIP	220	5%	1/16W	
R098	1-216-817-11	METAL CHIP	470	5%	1/16W	
R099	1-216-817-11	METAL CHIP	470	5%	1/16W	
R101	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R102	1-216-834-11	METAL CHIP	12K	5%	1/16W	
R103	1-216-816-11	METAL CHIP	390	5%	1/16W	
R104	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	(TR840E/TR845E)
R105	1-216-814-11	METAL CHIP	270	5%	1/16W	(EXCEPT TR840E/TR845E)
R105	1-216-819-11	METAL CHIP	680	5%	1/16W	(TR840E/TR845E)
R106	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R107	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R109	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R110	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	

Ref. No.	Part No.	Description				Remark
R112	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R113	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R152	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R154	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	(TR840E/TR845E)
R157	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	(TR840E/TR845E)
R161	1-216-804-11	METAL CHIP	39	5%	1/16W	(TR840E/TR845E)
R162	1-216-803-11	METAL CHIP	33	5%	1/16W	(TR840E/TR845E)
R165	1-216-803-11	METAL CHIP	33	5%	1/16W	(TR840E/TR845E)
R166	1-216-804-11	METAL CHIP	39	5%	1/16W	(TR840E/TR845E)
R167	1-216-803-11	METAL CHIP	33	5%	1/16W	
R170	1-216-804-11	METAL CHIP	39	5%	1/16W	
R175	1-216-836-11	METAL CHIP	18K	5%	1/16W	(EXCEPT TR311)
R175	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TR311)
R176	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TR840E:AUS)
R177	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R178	1-216-821-11	METAL CHIP	1K	5%	1/16W	(TR840E/TR845E)
R179	1-216-815-11	METAL CHIP	330	5%	1/16W	
R180	1-216-815-11	METAL CHIP	330	5%	1/16W	(TR840E/TR845E)
R183	1-218-876-11	RES,CHIP	16K	0.50%	1/16W	
R184	1-218-847-11	RES,CHIP	1K	0.50%	1/16W	
R202	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R203	1-216-814-11	METAL CHIP	270	5%	1/16W	
R205	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R206	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R208	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R210	1-216-809-11	METAL CHIP	100	5%	1/16W	
R211	1-216-830-11	METAL CHIP	5.6K	5%	1/16W	
R212	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R214	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R215	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R216	1-216-811-11	METAL CHIP	150	5%	1/16W	
R217	1-216-864-11	METAL CHIP	0	5%	1/16W	(EXCEPT TR840E:AUS)
R218	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	(TR311/TR512E/TR730E)
R219	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	
R220	1-216-815-11	METAL CHIP	330	5%	1/16W	(TR311/TR512E/TR730E)
R222	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	(TR311/TR512E/TR730E)
R223	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R224	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R225	1-216-826-11	METAL CHIP	2.7K	5%	1/16W	(TR311/TR512E/TR730E)
R226	1-216-820-11	METAL CHIP	820	5%	1/16W	
R227	1-216-811-11	METAL CHIP	150	5%	1/16W	
R228	1-216-813-11	METAL CHIP	220	5%	1/16W	
R229	1-216-805-11	METAL CHIP	47	5%	1/16W	
R230	1-216-812-11	METAL CHIP	180	5%	1/16W	

Ref. No.	Part No.	Description			Remark
R231	1-216-812-11	METAL CHIP	180	5%	1/16W
R232	1-216-815-11	METAL CHIP	330	5%	1/16W
					(TR311/TR512E/TR730E)
R233	1-216-824-11	METAL CHIP	1.8K	5%	1/16W
R234	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R236	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R237	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R238	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R239	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R240	1-216-857-11	METAL CHIP	1M	5%	1/16W
R241	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R242	1-216-845-11	METAL CHIP	100K	5%	1/16W
R243	1-216-845-11	METAL CHIP	100K	5%	1/16W
R244	1-216-845-11	METAL CHIP	100K	5%	1/16W
R245	1-216-840-11	METAL CHIP	39K	5%	1/16W
R246	1-216-835-11	METAL CHIP	15K	5%	1/16W
R247	1-216-817-11	METAL CHIP	470	5%	1/16W
R248	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R249	1-216-833-11	METAL CHIP	10K	5%	1/16W
R250	1-216-295-91	SHORT	0		
					(TR730E/TR840E/TR845E)
R251	1-216-833-11	METAL CHIP	10K	5%	1/16W
R252	1-216-821-11	METAL CHIP	1K	5%	1/16W
R253	1-216-845-11	METAL CHIP	100K	5%	1/16W
R254	1-216-864-11	METAL CHIP	0	5%	1/16W
					(EXCEPT TR730E)
R255	1-216-833-11	METAL CHIP	10K	5%	1/16W
R256	1-216-845-11	METAL CHIP	100K	5%	1/16W
R257	1-216-295-91	SHORT	0		
R302	1-216-817-11	METAL CHIP	470	5%	1/16W
					(TR730E/TR840E/TR845E)
R303	1-216-817-11	METAL CHIP	470	5%	1/16W
R304	1-216-817-11	METAL CHIP	470	5%	1/16W
R305	1-216-817-11	METAL CHIP	470	5%	1/16W
					(TR730E/TR840E/TR845E)
R308	1-216-864-11	METAL CHIP	0	5%	1/16W
					(EXCEPT TR730E/TR840E/TR845E)
R311	1-216-841-11	METAL CHIP	47K	5%	1/16W
R313	1-216-864-11	METAL CHIP	0	5%	1/16W
R314	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R315	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
					(TR730E/TR840E/TR845E)
R316	1-216-841-11	METAL CHIP	47K	5%	1/16W
					(TR730E/TR840E/TR845E)
R317	1-216-845-11	METAL CHIP	100K	5%	1/16W
R318	1-216-845-11	METAL CHIP	100K	5%	1/16W
R319	1-216-845-11	METAL CHIP	100K	5%	1/16W
					(TR730E/TR840E/TR845E)
R320	1-216-849-11	METAL CHIP	220K	5%	1/16W
					(TR730E/TR840E/TR845E)
R321	1-216-843-11	METAL CHIP	68K	5%	1/16W
R322	1-216-845-11	METAL CHIP	100K	5%	1/16W
					(EXCEPT TR730E/TR840E/TR845E)
R322	1-216-849-11	METAL CHIP	220K	5%	1/16W
					(TR730E/TR840E/TR845E)
R323	1-216-837-11	METAL CHIP	22K	5%	1/16W
R325	1-216-849-11	METAL CHIP	220K	5%	1/16W
					(EXCEPT TR730E/TR840E/TR845E)
R325	1-216-851-11	METAL CHIP	330K	5%	1/16W
					(TR730E/TR840E/TR845E)

Ref. No.	Part No.	Description			Remark
R328	1-162-925-11	CERAMIC CHIP	68PF	5%	50V
R331	1-216-820-11	METAL CHIP	820	5%	1/16W
R343	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TR730E/TR840E/TR845E)
R373	1-216-809-11	METAL CHIP	100	5%	1/16W
					(TR730E/TR840E/TR845E)
R374	1-216-809-11	METAL CHIP	100	5%	1/16W
R388	1-216-864-11	METAL CHIP	0	5%	1/16W
R389	1-216-864-11	METAL CHIP	0	5%	1/16W
R402	1-216-821-11	METAL CHIP	1K	5%	1/16W
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W
R404	1-216-845-11	METAL CHIP	100K	5%	1/16W
R405	1-216-845-11	METAL CHIP	100K	5%	1/16W
R406	1-216-845-11	METAL CHIP	100K	5%	1/16W
R407	1-216-845-11	METAL CHIP	100K	5%	1/16W
R409	1-216-845-11	METAL CHIP	100K	5%	1/16W
R410	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R412	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R414	1-216-864-11	METAL CHIP	0	5%	1/16W
R415	1-216-821-11	METAL CHIP	1K	5%	1/16W
R416	1-216-821-11	METAL CHIP	1K	5%	1/16W
R417	1-216-821-11	METAL CHIP	1K	5%	1/16W
R418	1-216-821-11	METAL CHIP	1K	5%	1/16W
R419	1-216-839-11	METAL CHIP	33K	5%	1/16W
R420	1-216-833-11	METAL CHIP	10K	5%	1/16W
R421	1-216-833-11	METAL CHIP	10K	5%	1/16W
R424	1-216-841-11	METAL CHIP	47K	5%	1/16W
R425	1-216-853-11	METAL CHIP	470K	5%	1/16W
R426	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R427	1-216-841-11	METAL CHIP	47K	5%	1/16W
R428	1-216-841-11	METAL CHIP	47K	5%	1/16W
R429	1-216-811-11	METAL CHIP	150	5%	1/16W
R430	1-216-813-11	METAL CHIP	220	5%	1/16W
R431	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R432	1-216-845-11	METAL CHIP	100K	5%	1/16W
R433	1-216-845-11	METAL CHIP	100K	5%	1/16W
R434	1-216-853-11	METAL CHIP	470K	5%	1/16W
R435	1-216-853-11	METAL CHIP	470K	5%	1/16W
R440	1-216-841-11	METAL CHIP	47K	5%	1/16W
R441	1-216-845-11	METAL CHIP	100K	5%	1/16W
R452	1-217-671-11	METAL CHIP	1	5%	1/10W
R453	1-217-671-11	METAL CHIP	1	5%	1/10W
R454	1-217-671-11	METAL CHIP	1	5%	1/10W
R455	1-216-833-11	METAL CHIP	10K	5%	1/16W
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W
R457	1-216-833-11	METAL CHIP	10K	5%	1/16W
R458	1-216-808-11	METAL CHIP	82	5%	1/16W
R459	1-216-864-11	METAL CHIP	0	5%	1/16W
R460	1-216-864-11	METAL CHIP	0	5%	1/16W
R461	1-216-853-11	METAL CHIP	470K	5%	1/16W
R462	1-216-853-11	METAL CHIP	470K	5%	1/16W
R463	1-216-853-11	METAL CHIP	470K	5%	1/16W
R464	1-216-851-11	METAL CHIP	330K	5%	1/16W
R465	1-216-845-11	METAL CHIP	100K	5%	1/16W
R466	1-216-841-11	METAL CHIP	47K	5%	1/16W
R467	1-216-833-11	METAL CHIP	10K	5%	1/16W
R468	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description			Remark
R469	1-216-841-11	METAL CHIP	47K	5%	1/16W
R470	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R471	1-216-833-11	METAL CHIP	10K	5%	1/16W
R472	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR311)
R472	1-216-837-11	METAL CHIP	22K	5%	1/16W (EXCEPT TR311)
R473	1-216-841-11	METAL CHIP	47K	5%	1/16W
R474	1-216-817-11	METAL CHIP	470	5%	1/16W
R475	1-216-838-11	METAL CHIP	27K	5%	1/16W
R476	1-216-817-11	METAL CHIP	470	5%	1/16W
R477	1-216-864-11	METAL CHIP	0	5%	1/16W
R479	1-216-864-11	METAL CHIP	0	5%	1/16W
R480	1-216-864-11	METAL CHIP	0	5%	1/16W
R481	1-216-864-11	METAL CHIP	0	5%	1/16W
R482	1-216-830-11	METAL CHIP	5.6K	5%	1/16W (EXCEPT TR311)
R482	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR311)
R483	1-216-836-11	METAL CHIP	18K	5%	1/16W
R484	1-217-671-11	METAL CHIP	1	5%	1/10W
R485	1-217-671-11	METAL CHIP	1	5%	1/10W
R486	1-216-845-11	METAL CHIP	100K	5%	1/16W
R487	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R488	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R490	1-216-023-00	METAL CHIP	82	5%	1/10W
R502	1-216-798-11	RES,CHIP	12	5%	1/16W
R503	1-216-798-11	RES,CHIP	12	5%	1/16W
R504	1-216-845-11	METAL CHIP	100K	5%	1/16W
R505	1-216-864-11	METAL CHIP	0	5%	1/16W
R506	1-216-857-11	METAL CHIP	1M	5%	1/16W
R508	1-216-809-11	METAL CHIP	100	5%	1/16W
R509	1-216-864-11	METAL CHIP	0	5%	1/16W
R510	1-216-809-11	METAL CHIP	100	5%	1/16W
R511	1-216-809-11	METAL CHIP	100	5%	1/16W (EXCEPT TR640E/TR730E/TR840E/TR845E)
R512	1-216-853-11	METAL CHIP	470K	5%	1/16W
R513	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R514	1-216-821-11	METAL CHIP	1K	5%	1/16W
R515	1-216-864-11	METAL CHIP	0	5%	1/16W
R522	1-216-864-11	METAL CHIP	0	5%	1/16W
R525	1-216-864-11	METAL CHIP	0	5%	1/16W
R526	1-216-864-11	METAL CHIP	0	5%	1/16W
R527	1-216-864-11	METAL CHIP	0	5%	1/16W (TR640E/TR730E/TR840E/TR845E)
R529	1-216-864-11	METAL CHIP	0	5%	1/16W
R551	1-216-841-11	METAL CHIP	47K	5%	1/16W
R554	1-216-843-11	METAL CHIP	68K	5%	1/16W
R555	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R556	1-216-001-00	METAL CHIP	10	5%	1/10W
R557	1-216-843-11	METAL CHIP	68K	5%	1/16W
R558	1-216-295-91	SHORT	0		
R560	1-216-821-11	METAL CHIP	1K	5%	1/16W
R561	1-216-853-11	METAL CHIP	470K	5%	1/16W
R562	1-216-849-11	METAL CHIP	220K	5%	1/16W
R563	1-216-853-11	METAL CHIP	470K	5%	1/16W
R564	1-216-853-11	METAL CHIP	470K	5%	1/16W
R565	1-216-833-11	METAL CHIP	10K	5%	1/16W
R566	1-216-835-11	METAL CHIP	15K	5%	1/16W
R567	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R569	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R570	1-216-841-11	METAL CHIP	47K	5%	1/16W
R571	1-216-837-11	METAL CHIP	22K	5%	1/16W
R572	1-216-845-11	METAL CHIP	100K	5%	1/16W
R573	1-216-815-11	METAL CHIP	330	5%	1/16W
R574	1-216-821-11	METAL CHIP	1K	5%	1/16W
R575	1-216-821-11	METAL CHIP	1K	5%	1/16W
R576	1-216-821-11	METAL CHIP	1K	5%	1/16W
R577	1-216-833-11	METAL CHIP	10K	5%	1/16W
R579	1-216-821-11	METAL CHIP	1K	5%	1/16W
R582	1-216-864-11	METAL CHIP	0	5%	1/16W
R603	1-216-845-11	METAL CHIP	100K	5%	1/16W
R604	1-216-813-11	METAL CHIP	220	5%	1/16W
R608	1-216-845-11	METAL CHIP	100K	5%	1/16W
R612	1-216-853-11	METAL CHIP	470K	5%	1/16W
R618	1-216-853-11	METAL CHIP	470K	5%	1/16W
R619	1-216-853-11	METAL CHIP	470K	5%	1/16W
R620	1-216-853-11	METAL CHIP	470K	5%	1/16W
R621	1-216-853-11	METAL CHIP	470K	5%	1/16W
R622	1-216-853-11	METAL CHIP	470K	5%	1/16W
R624	1-216-853-11	METAL CHIP	470K	5%	1/16W
R625	1-216-845-11	METAL CHIP	100K	5%	1/16W
R627	1-216-853-11	METAL CHIP	470K	5%	1/16W
R628	1-216-841-11	METAL CHIP	47K	5%	1/16W
R629	1-216-833-11	METAL CHIP	10K	5%	1/16W
R630	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R631	1-216-845-11	METAL CHIP	100K	5%	1/16W
R632	1-216-857-11	METAL CHIP	1M	5%	1/16W
R633	1-216-853-11	METAL CHIP	470K	5%	1/16W
R634	1-216-853-11	METAL CHIP	470K	5%	1/16W
R635	1-216-857-11	METAL CHIP	1M	5%	1/16W
R636	1-216-857-11	METAL CHIP	1M	5%	1/16W
R637	1-216-845-11	METAL CHIP	100K	5%	1/16W
R638	1-216-845-11	METAL CHIP	100K	5%	1/16W
R639	1-216-845-11	METAL CHIP	100K	5%	1/16W
R640	1-216-845-11	METAL CHIP	100K	5%	1/16W
R641	1-216-845-11	METAL CHIP	100K	5%	1/16W
R642	1-216-821-11	METAL CHIP	1K	5%	1/16W
R643	1-216-857-11	METAL CHIP	1M	5%	1/16W
R644	1-216-841-11	METAL CHIP	47K	5%	1/16W
R645	1-216-845-11	METAL CHIP	100K	5%	1/16W
R646	1-216-853-11	METAL CHIP	470K	5%	1/16W
R647	1-216-853-11	METAL CHIP	470K	5%	1/16W
R648	1-216-853-11	METAL CHIP	470K	5%	1/16W
R649	1-216-857-11	METAL CHIP	1M	5%	1/16W
R650	1-219-570-11	RES,CHIP	10M	5%	1/16W
R651	1-216-845-11	METAL CHIP	100K	5%	1/16W
R652	1-216-853-11	METAL CHIP	470K	5%	1/16W
R653	1-216-853-11	METAL CHIP	470K	5%	1/16W
R654	1-216-817-11	METAL CHIP	470	5%	1/16W
R655	1-216-853-11	METAL CHIP	470K	5%	1/16W
R662	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR730E/TR840E/TR845E)
R663	1-216-853-11	METAL CHIP	470K	5%	1/16W (TR730E/TR840E/TR845E)

Ref. No.	Part No.	Description			Remark
R665	1-216-853-11	METAL CHIP	470K	5%	1/16W (TR730E/TR840E/TR845E)
R666	1-216-821-11	METAL CHIP	1K	5%	1/16W
R667	1-216-821-11	METAL CHIP	1K	5%	1/16W
R668	1-216-821-11	METAL CHIP	1K	5%	1/16W
R669	1-216-821-11	METAL CHIP	1K	5%	1/16W
R670	1-216-821-11	METAL CHIP	1K	5%	1/16W
R671	1-216-821-11	METAL CHIP	1K	5%	1/16W
R672	1-216-821-11	METAL CHIP	1K	5%	1/16W
R673	1-216-821-11	METAL CHIP	1K	5%	1/16W
R675	1-216-821-11	METAL CHIP	1K	5%	1/16W
R676	1-216-821-11	METAL CHIP	1K	5%	1/16W
R677	1-216-821-11	METAL CHIP	1K	5%	1/16W
R678	1-216-821-11	METAL CHIP	1K	5%	1/16W
R679	1-216-821-11	METAL CHIP	1K	5%	1/16W
R680	1-216-845-11	METAL CHIP	100K	5%	1/16W
R681	1-216-821-11	METAL CHIP	1K	5%	1/16W
R682	1-216-821-11	METAL CHIP	1K	5%	1/16W
R683	1-216-821-11	METAL CHIP	1K	5%	1/16W
R684	1-216-821-11	METAL CHIP	1K	5%	1/16W
R685	1-216-821-11	METAL CHIP	1K	5%	1/16W
R686	1-216-821-11	METAL CHIP	1K	5%	1/16W
R687	1-216-821-11	METAL CHIP	1K	5%	1/16W
R689	1-216-864-11	METAL CHIP	0	5%	1/16W (EXCEPT TR730E/TR840E/TR845E)
R690	1-216-821-11	METAL CHIP	1K	5%	1/16W
R691	1-216-845-11	METAL CHIP	100K	5%	1/16W
R692	1-216-853-11	METAL CHIP	470K	5%	1/16W
R693	1-216-821-11	METAL CHIP	1K	5%	1/16W
R695	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R697	1-216-854-11	METAL CHIP	560K	5%	1/16W
R701	1-216-839-11	METAL CHIP	33K	5%	1/16W (TR845E)
R702	1-216-838-11	METAL CHIP	27K	5%	1/16W (TR845E)
R703	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR845E)
R704	1-216-819-11	METAL CHIP	680	5%	1/16W (TR845E)
R705	1-216-812-11	METAL CHIP	180	5%	1/16W (TR845E)
R706	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR845E)
R707	1-216-824-11	METAL CHIP	1.8K	5%	1/16W (TR845E)
R708	1-216-816-11	METAL CHIP	390	5%	1/16W (TR845E)
R709	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR845E)
R710	1-216-826-11	METAL CHIP	2.7K	5%	1/16W (TR845E)
R711	1-216-820-11	METAL CHIP	820	5%	1/16W (TR845E)
R712	1-216-826-11	METAL CHIP	2.7K	5%	1/16W (TR845E)
R713	1-216-825-11	METAL CHIP	2.2K	5%	1/16W (TR845E)
R714	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR845E)

Ref. No.	Part No.	Description			Remark
R715	1-216-829-11	METAL CHIP	4.7K	5%	1/16W (TR845E)
R716	1-216-819-11	METAL CHIP	680	5%	1/16W (TR845E)
R717	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR845E)
R718	1-216-816-11	METAL CHIP	390	5%	1/16W (TR845E)
R719	1-216-817-11	METAL CHIP	470	5%	1/16W (TR845E)
R720	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR845E)
R721	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR845E)
R722	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR845E)
R723	1-216-830-11	METAL CHIP	5.6K	5%	1/16W (TR845E)
R724	1-216-864-11	METAL CHIP	0	5%	1/16W (TR845E)
R725	1-216-821-11	METAL CHIP	1K	5%	1/16W (TR845E)
R726	1-216-864-11	METAL CHIP	0	5%	1/16W (EXCEPT 845E)
R775	1-216-864-11	METAL CHIP	0	5%	1/16W (EXCEPT TR311)
R916	1-216-864-11	METAL CHIP	0	5%	1/16W
R917	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR311/TR512E/TR730E/TR840E:AUS)
R917	1-216-845-11	METAL CHIP	100K	5%	1/16W (EXCEPT TR311/TR512E/TR730E/TR840E:AUS)
R918	1-216-833-11	METAL CHIP	10K	5%	1/16W (EXCEPT TR311/TR512E/TR730E/TR840E:AUS)
R918	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR311/TR512E/TR730E/TR840E:AUS)
R919	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR845E)
R919	1-216-837-11	METAL CHIP	22K	5%	1/16W (EXCEPT TR840E:AUS)
R919	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR640E)
R919	1-216-842-11	METAL CHIP	56K	5%	1/16W (TR311E/TR411E/TR412E/TR511E)
R919	1-216-843-11	METAL CHIP	68K	5%	1/16W (TR311)
R919	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR512E/TR730E/TR840E:AUS)
R920	1-216-833-11	METAL CHIP	10K	5%	1/16W (TR512E)
R920	1-216-837-11	METAL CHIP	22K	5%	1/16W (TR730E)
R920	1-216-841-11	METAL CHIP	47K	5%	1/16W (TR840E:AUS)
R920	1-216-842-11	METAL CHIP	56K	5%	1/16W (TR311)
R920	1-216-843-11	METAL CHIP	68K	5%	1/16W (TR311E/TR411E/TR412E/TR511E)
R920	1-216-845-11	METAL CHIP	100K	5%	1/16W (TR640E/TR840E:EXCEPT AUS/845E)
R921	1-216-845-11	METAL CHIP	100K	5%	1/16W
R922	1-217-671-11	METAL CHIP	1	5%	1/10W
R923	1-217-671-11	METAL CHIP	1	5%	1/10W

Ref. No.	Part No.	Description			Remark
R924	1-216-821-11	METAL CHIP	1K	5%	1/16W
R925	1-216-821-11	METAL CHIP	1K	5%	1/16W
R926	1-216-864-11	METAL CHIP	0	5%	1/16W (TR730E/TR840E/TR845E)
R927	1-216-864-11	METAL CHIP	0	5%	1/16W (TR311)
R928	1-216-821-11	METAL CHIP	1K	5%	1/16W
R929	1-216-864-11	METAL CHIP	0	5%	1/16W
		< THERMISTOR >			
TH401	1-809-360-21	THERMISTOR, NTC (2125)(TR845E)			
		< VIBRATOR >			
X151	1-767-029-21	VIBRATOR, CRYSTAL (17.734475MHz)			(TR840E:AUS)
X401	1-760-655-41	VIBRATOR, CRYSTAL (20MHz)			
X501	1-760-320-11	VIBRATOR, CRYSTAL (28.6363MHz)(TR311)			
X501	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz)			(EXCEPT TR311)
X601	1-579-907-21	VIBRATOR, CERAMIC (20MHz)			
X602	1-760-458-21	VIBRATOR, CRYSTAL (32.768kHz)			

Ref. No.	Part No.	Description			Remark
	A-7066-774-A	VF-99(HP) BOARD, COMPLETE **************************			(EXCEPT TR311/TR512E/TR730E)
	A-7066-792-A	VF-99(VHL4) BOARD, COMPLETE (TR311) ****************************			(Ref. No. 10,000 Series)
		< CAPACITOR >			
C901	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V
C902	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C903	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C904	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C905	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C906	1-162-638-11	CERAMIC CHIP	1uF		16V
C907	1-104-563-11	FILM CHIP	0.1uF	5%	16V
C908	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C909	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
⚠C910	1-164-758-11	CERAMIC CHIP	0.0039uF	5%	50V
⚠C911	1-164-715-11	CERAMIC CHIP	0.0068uF	5%	50V
C912	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V
C913	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C914	1-107-689-21	TANTAL. CHIP	1uF	20%	35V (TR311)
C914	1-113-984-11	TANTAL. CHIP	1.5uF	20%	35V (EXCEPT TR311)
C915	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C916	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V
		< CONNECTOR >			
CN901	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P			
CN902	1-580-057-11	PIN, CONNECTOR 4P			
		< DIODE >			
D901	8-719-951-21	DIODE PR1102W-TR			
D903	8-719-404-49	DIODE MA111-TX			
		< IC >			
IC901	8-759-196-14	IC BA7149F-E2			
		< COIL >			
L901	1-412-031-11	INDUCTOR CHIP 47uH			
L902	1-410-387-11	INDUCTOR CHIP 33uH			
⚠L903	1-411-697-11	COIL, FERRITE (HLC)			
		< TRANSISTOR >			
Q901	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX			
Q902	8-729-106-68	TRANSISTOR 2SD1615-T1GLGK			
Q903	8-729-216-31	TRANSISTOR 2SA1163G-TE85L			
Q904	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX			
		< RESISTOR >			
R901	1-216-817-11	METAL CHIP	470	5%	1/16W
R902	1-216-817-11	METAL CHIP	470	5%	1/16W
R903	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R904	1-216-833-11	METAL CHIP	10K	5%	1/16W
R905	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R906	1-216-813-11	METAL CHIP	220	5%	1/16W
R907	1-216-845-11	METAL CHIP	100K	5%	1/16W
R908	1-216-852-11	METAL CHIP	390K	5%	1/16W
R909	1-216-833-11	METAL CHIP	10K	5%	1/16W
R910	1-216-835-11	METAL CHIP	15K	5%	1/16W
R911	1-216-160-00	RES,CHIP	27	5%	1/8W
R912	1-216-857-11	METAL CHIP	1M	5%	1/16W
R913	1-216-820-11	METAL CHIP	820	5%	1/16W
R914	1-216-813-11	METAL CHIP	220	5%	1/16W
R915	1-216-793-11	RES,CHIP	4.7	5%	1/16W
R916	1-218-879-11	RES,CHIP	22K	0.50%	1/16W (TR311)
R916	1-218-881-11	RES,CHIP	27K	0.50%	1/16W (EXCEPT TR311)
R917	1-218-891-11	RES,CHIP	68K	0.50%	1/16W (TR311)
R917	1-218-893-11	RES,CHIP	82K	0.50%	1/16W (EXCEPT TR311)
R918	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R919	1-216-839-11	METAL CHIP	33K	5%	1/16W (TR311)
R919	1-216-843-11	METAL CHIP	68K	5%	1/16W (EXCEPT TR311)
R920	1-216-837-11	METAL CHIP	22K	5%	1/16W
R921	1-216-795-11	RES,CHIP	6.8	5%	1/16W
R922	1-216-847-11	METAL CHIP	150K	5%	1/16W
R923	1-216-857-11	METAL CHIP	1M	5%	1/16W
R924	1-216-862-11	RES,CHIP	2.7M	5%	1/16W
R925	1-216-862-11	RES,CHIP	2.7M	5%	1/16W
R926	1-216-821-11	METAL CHIP	1K	5%	1/16W
R927	1-216-821-11	METAL CHIP	1K	5%	1/16W
R928	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R929	1-216-818-11	METAL CHIP	560	5%	1/16W

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
		< VARIABLE RESISTOR >			
RV903	1-238-852-11	RES, ADJ, CERMET 470			
RV904	1-223-566-11	RES, ADJ, METAL GLAZE 1M			
		< TRANSFORMER >			
⚠T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK			
		< THERMISTOR >			
TH901	1-809-350-21	THERMISTOR, NTC (2125)			
		< FLEXIBLE BOARD >			
⚠W901	1-540-019-21	SOCKET ASSY, CRT			
	A-7073-437-A	VF-119 BOARD, COMPLETE (TR512E/TR730E) ***********************			
		< CAPACITOR >			
C5401	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C5402	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5403	1-135-179-21	TANTAL. CHIP	2.2uF	20%	16V
C5404	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C5405	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C5406	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C5407	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5408	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5409	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5410	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5411	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5413	1-107-686-11	TANTAL. CHIP	4.7uF	20%	16V
C5414	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5415	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C5416	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C5417	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5418	1-115-566-11	CERAMIC CHIP	4.7uF	10%	10V
C5419	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C5420	1-164-357-11	CERAMIC CHIP	1000PF	5%	50V
C5421	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C5422	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C5423	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5424	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C5427	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C5429	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
		< CONNECTOR >			
CN5401	1-766-350-21	CONNECTOR, FFC/FPC 20P			
CN5402	1-691-380-21	CONNECTOR, FFC/FPC 16P			
		< DIODE >			
D5401	8-713-102-80	DIODE 1T369-01-T8A			
		< IC >			
IC5401	8-759-498-53	IC CXA8115R-T4			
IC5402	8-759-364-05	IC M62376GP-65AD			
IC5404	8-752-389-81	IC CXD2458R-T4			

Ref. No.	Part No.	Description			Remark
		< COIL >			
L5401	1-412-951-11	INDUCTOR	10uH		
L5402	1-412-951-11	INDUCTOR	10uH		
L5403	1-412-959-11	INDUCTOR	47uH		
L5404	1-412-949-21	INDUCTOR	6.8uH		
L5405	1-412-959-11	INDUCTOR	47uH		
		< RESISTOR >			
R5401	1-216-864-11	METAL CHIP	0	5%	1/16W
R5403	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5405	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5408	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5409	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5415	1-216-864-11	METAL CHIP	0	5%	1/16W
R5416	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5417	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5420	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5421	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5422	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5423	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5424	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5425	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5426	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5429	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5431	1-216-809-11	METAL CHIP	100	5%	1/16W
R5432	1-216-809-11	METAL CHIP	100	5%	1/16W
R5433	1-218-877-11	RES,CHIP	18K	0.50%	1/16W
R5434	1-218-873-11	RES,CHIP	12K	0.50%	1/16W
R5435	1-216-809-11	METAL CHIP	100	5%	1/16W
R5437	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5439	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5440	1-218-905-11	RES,CHIP	270K	0.50%	1/16W
R5441	1-218-877-11	RES,CHIP	18K	0.50%	1/16W
R5444	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5446	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5447	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5448	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5449	1-216-864-11	METAL CHIP	0	5%	1/16W
R5452	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5458	1-216-864-11	METAL CHIP	0	5%	1/16W
R5460	1-216-864-11	METAL CHIP	0	5%	1/16W
R5468	1-216-864-11	METAL CHIP	0	5%	1/16W
R5469	1-216-864-11	METAL CHIP	0	5%	1/16W
R5470	1-216-864-11	METAL CHIP	0	5%	1/16W
R5471	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5472	1-218-883-11	RES,CHIP	33K	0.50%	1/16W
	A-7073-438-A	VF-120 BOARD, COMPLETE (TR512E/TR730E) ***********************			
		< CAPACITOR >			
C5302	1-104-916-11	TANTAL. CHIP	6.8uF	20%	20V
C5303	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C5304	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5305	1-104-851-11	TANTAL. CHIP	10uF	20%	10V
C5306	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref. No.	Part No.	Description			Remark
C5307	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C5308	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C5309	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C5310	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C5311	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C5312	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C5313	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C5314	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
		< CONNECTOR >			
CN5301	1-691-346-11	CONNECTOR, FFC/FPC (ZIF) 8P			
CN5302	1-691-513-11	CONNECTOR, BOARD TO BOARD 12P			
		< DIODE >			
D5301	8-719-043-70	DIODE MA6S121-(TX)			
D5302	8-719-056-49	DIODE 1SS370(TE85L)			
		< IC >			
IC5301	8-759-097-75	IC MB3789PFV-G-BND-ER			
		< COIL >			
L5301	1-412-031-11	INDUCTOR CHIP 47uH			
		< TRANSISTOR >			
Q5301	8-729-028-81	TRANSISTOR RN2305-TE85L			
Q5304	8-729-403-35	TRANSISTOR UN5113-TX			
Q5305	8-729-402-42	TRANSISTOR UN5213-TX			
		< RESISTOR >			
R5301	1-216-809-11	METAL CHIP	100	5%	1/16W
R5304	1-218-901-11	RES,CHIP	180K	0.50%	1/16W
R5305	1-218-887-11	RES,CHIP	47K	0.50%	1/16W
R5306	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5307	1-216-838-11	METAL CHIP	27K	5%	1/16W
R5308	1-216-847-11	METAL CHIP	150K	5%	1/16W
R5309	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5310	1-216-842-11	METAL CHIP	56K	5%	1/16W
R5311	1-216-850-11	METAL CHIP	270K	5%	1/16W
R5312	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5313	1-216-842-11	METAL CHIP	56K	5%	1/16W
R5314	1-216-850-11	METAL CHIP	270K	5%	1/16W
R5315	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5316	1-216-851-11	METAL CHIP	330K	5%	1/16W
R5317	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5318	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R5321	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5322	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5324	1-216-864-11	METAL CHIP	0	5%	1/16W

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS **************	
9	1-475-619-11	SWITCH BLOCK, CONTROL (SS-8500)	(EXCEPT TR730E)
9	1-475-619-21	SWITCH BLOCK, CONTROL (SS-8500)(TR730E)	
12	1-475-617-11	SWITCH BLOCK, CONTROL (FK-8500)	(TR311/TR311E/TR411E/TR412E)
12	1-475-617-31	SWITCH BLOCK, CONTROL (FK-8500)	(EXCEPT TR311/TR311E/TR411E/TR412E/TR840E:AUS)
12	1-475-617-61	SWITCH BLOCK, CONTROL (FK-8500)	(TR840E:AUS)
101	1-475-620-11	SWITCH BLOCK, CONTROL(MF-8500)	(TR511E/TR512E/TR640E/TR730E/TR840E/TR845E)
107	1-783-240-11	CABLE, FLEXIBLE FLAT (FFC-236)	
158	1-783-241-11	CABLE, FLEXIBLE FLAT (FFC-235)	
204	1-668-962-11	FP-638 FLEXIBLE BOARD	
257	1-774-867-31	CONNECTOR, EXTERNAL(HOT SHOE)8P	(TR730E/TR840E/TR845E)
260	1-668-978-11	FP-633 FLEXIBLE BOARD	(TR511E/TR512E/TR640E)
261	1-668-960-11	FP-629 FLEXIBLE BOARD	
262	1-668-956-11	FP-620 FLEXIBLE BOARD	(TR640E/TR730E/TR840E/TR845E)
263	1-668-957-11	FP-621 FLEXIBLE BOARD	
264	1-668-958-11	FP-622 FLEXIBLE BOARD	
308	1-668-959-11	FP-623 FLEXIBLE BOARD	
311	1-758-084-21	FILTER BLOCK, OPTICAL	(TR640E/TR730E/TR840E/TR845E)
311	1-758-133-21	FILTER BLOCK, OPTICAL	(TR311/TR311E/TR411E/TR412E/TR511E/TR512E)
313	8-848-724-01	DEVICE, LENS, LSV-601A (SOC)	(TR311/TR311E/TR411E/TR412E)
313	8-848-722-01	DEVICE, LENS LSV-600A(SOC)	(EXCEPT TR311/TR311E/TR411E/TR412E)
351	8-848-722-01	DEVICE, LENS LSV-600A (SOC)	(TR311/TR311E/TR411E/TR412E)
351	8-848-724-01	DEVICE, LENS LSV-601A (SOC)	(EXCEPT TR311/TR311E/TR411E/TR412E)
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
762	1-657-786-13	FP-221 FLEXIBLE BOARD	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
D001	8-719-988-42	DIOEDE GL453	
IC401	A-7030-862-A	CCD BLOCK ASSY (206 SERVICE) (TR311)	
IC401	A-7030-871-A	CCD BLOCK ASSY (211 SERVICE)	(TR640E/TR730E/TR840E/TR845E)
IC401	A-7030-874-A	CCD BLOCK ASSY (207 SERVICE)	(TR311E/TR411E/TR412E/TR511E/TR512E)
J001	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)	
J901	1-694-384-11	TERMINAL BOARD, BATTERY	
LCD901	A-7093-473-A	INDICATION LCD BLOCK ASSY	(TR311/TR311E/TR411E/TR412E)
LCD901	A-7093-486-A	INDICATION LCD BLOCK ASSY	(TR840E/TR845E)
LCD901	A-7093-509-A	INDICATION LCD BLOCK ASSY	(TR511E/TR640E/TR840E/TR845E)
LCD902	8-753-023-36	LCX024AK-5	
M901	A-7048-868-A	DRUM ASSY (DGH-0E2A-R) (PAL)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Be sure to read "Note on the CCD Imager replacement" on page 4–8 when changing the CCD imager.

Ref. No.	Part No.	Description	Remark
M901	A-7048-870-A	DRUM ASSY (DGH-0E3A-R) (NTSC)	
M902	8-835-531-32	CAPSTAN ASSY	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
M905	1-763-047-11	MOTOR, FOCUS STEPPING	
M906	1-763-046-11	MOTOR, ZOOM STEPPING	
MIC901	1-542-312-11	MICROPHONE (L-CH)	
MIC902	1-542-312-11	MICROPHONE (R-CH) (TR730E/TR840E/TR845E)	
⚠ND801	1-517-759-11	LIGHT, BACK (TR840E/TR845E)	
⚠ND5351	1-517-414-51	FLUORESCENT TUBE (0.55 INCH)	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C.C. LOCK)	
S003	1-572-688-11	SWITCH, PUSH (EJECT)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW)	
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH)	
⚠V901	1-452-673-31	CRT ASSY (M01KXX90WB)	

ACCESSORIES & PACKING MATERIALS
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Ref. No.	Part No.	Description	Remark
	1-467-574-21	REMOTE COMMANDER (RMT-708) (EXCEPT TR311/TR311E/TR411E/TR845E)	
⚠	1-475-599-11	ADAPTOR, AC (AC-L10)	
⚠	1-569-008-11	ADAPTOR, CONVERSION 2P (TR311/TR311E:E,HK/TR511E:E,HK/TR512E:E/TR730E:E)	
	1-573-291-11	21 Pin CONNECTOR, CONVERSION MVC91 (Stereo) (TR840E:AEP,EE,NE,RU/TR845E)	
	1-574-039-21	CORD, CONNECTION (A/V CONNECTING CABLE (Monaural) 1.5m) (TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E)	
*⚠	1-575-131-11	CORD, POWER (EXCEPT TR311E:HK,AUS,CN/TR411E:UK/TR511E:UK,HK,AUS,CN/ TR512E:AUS,CN/TR640E:UK/TR840E:UK,AUS/TR845E)	
	1-575-334-11	CORD, CONNECTION (A/V CONNECTING CABLE (Stereo) 1.5m) (TR730E/TR840E/TR845E)	
⚠	1-696-819-11	CORD, POWER (TR840E:AUS)	
⚠	1-696-819-21	CORD, POWER (TR311E:AUS/TR511E:AUS/TR512E:AUS)	
	1-696-862-21	CORD, CONNECTION (EXCEPT TR730E/TR840E/TR845E)	
	1-764-622-11	21 Pin ADAPTOR, CONVERSION MVC89 (Monaural) (TR411E/TR412E/TR511E:AEP,EE,NE,RU,UK/TR640E)	
⚠	1-769-608-11	CORD, POWER (EXCEPT TR311E:HK,AUS,CN/TR411E:UK/TR412E:UK/TR511E:UK,HK,AUS,CN/ TR512E:AUS,CN/TR640E:UK/TR840E:UK,AUS/TR845E)	
⚠	1-782-476-11	CORD, POWER (TR311E:CN/TR511E:CN/TR512E:CN/TR730E:CN)	
⚠	1-783-374-11	CORD, POWER (TR311E:HK/TR411E:UK/TR511E:UK,HK/TR640E:UK/TR840E:UK/TR845E)	
	3-861-898-31	MANUAL, INSTRUCTION (ENGLISH) (TR311)	
	3-861-898-41	MANUAL,INSTRUCTION (SPANISH,PORTUGUESE) (TR311)	
	3-861-898-51	MANUAL, INSTRUCTION (KOREAN) (TR311)	
	3-861-898-61	MANUAL, INSTRUCTION (CHINESE) (TR311)	
	3-861-899-11	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN) (TR411E:EE,UK/TR412E:EE,NE,RU/TR511E:EE,NE,RU,UK/ TR640E:EE,NE,RU,UK/TR840E:EE,NE,RU,UK/TR845E)	
	3-861-899-21	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE)(TR411E:AEP1/TR412E:AEP1/ TR511E:AEP1/TR640E:AEP1/TR840E:AEP1/TR845E)	
	3-861-899-31	MANUAL, INSTRUCTION (GERMAN, ITALIAN) (TR411E:AEP/TR412E:AEP/TR511E:AEP/ TR640E:AEP/TR840E:AEP/TR845E)	
	3-861-899-41	MANUAL, INSTRUCTION (FRENCH,DUCH) (TR411E:AEP2/TR412E:AEP2/TR511E:AEP2/ TR640E:AEP2/TR840E:AEP2/TR845E:AEP)	
	3-861-899-51	MANUAL, INSTRUCTION (SWEDISH,PORTUGUESE)(TR411E:EE,NE,RU/TR412E:EE,NE,RU/ TR511E:EE,NE,RU/TR640E:EE,NE,RU/TR840E:EE,NE,RU)	
	3-861-900-11	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN) (TR311E/TR511E:E,HK,AUS,CN/TR512E/TR730E/TR840E:AUS)	
	3-861-900-21	MANUAL, INSTRUCTION (FRENCH, GERMAN) (TR511E:E,HK,CN/TR512E:E/TR730E)	
	3-861-900-31	MANUAL, INSTRUCTION (ARABIC, PERSIAN) (TR311E:E,CN/TR511E:E,CN/TR512E:E/TR730E)	
	3-861-900-41	MANUAL, INSTRUCTION (CHINESE) (TR311E:HK/TR511E:HK)	
	3-861-900-51	MANUAL, INSTRUCTION (CHINESE) (TR311E:E,CN/TR511E:E,CN/TR512E:E/TR730E)	
	3-947-969-21	BELT (S), SHOULDER	
	8-917-593-90	COMMANDER, REMOTE (RMT-717) (TR845E)	
**	NP-F330	BATTERY PACK	

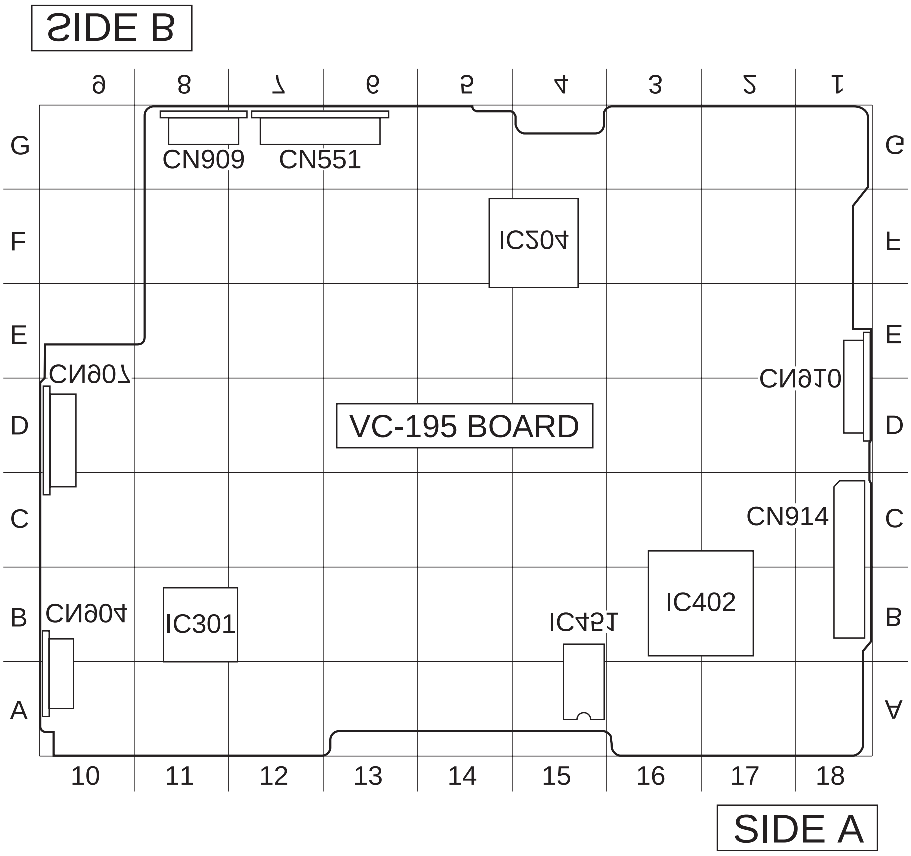
Note.
** MARKPARTSIS AVAILABLE AS AN OPTIONAL ACCESSORY

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

< PARTS REFERENCE SHEET >

You can find the parts position of mount locations applying to boards of a set.

Take a copy CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

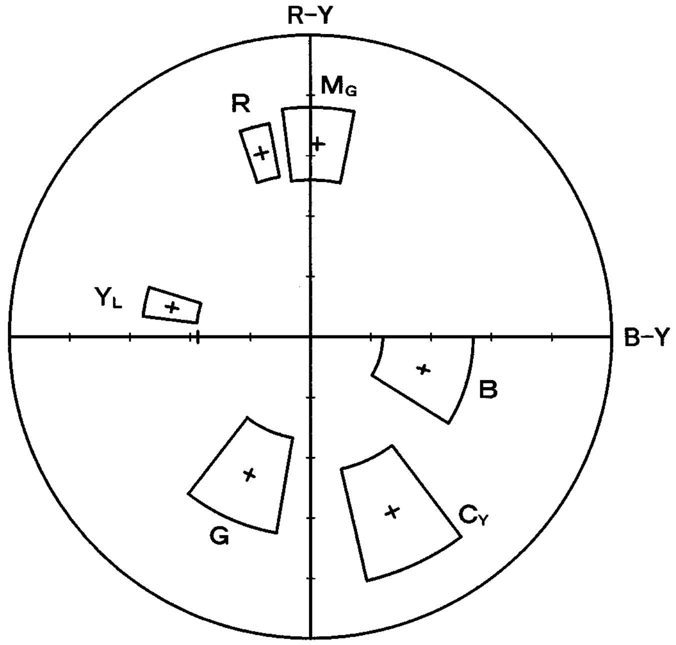

SIDE B
9
8
7
6
5
4
3
2
1
G
F
E
D
C
B
A
CN909
CN551
IC204
CN907
CN910
VC-195 BOARD
CN914
IC402
CN904
IC301
IC451
10
11
12
13
14
15
16
17
18
SIDE A

CCD-TR311/TR311E/TR411E/TR412E/TR511E/TR512E/TR640E/TR730E/TR840E/TR845E

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

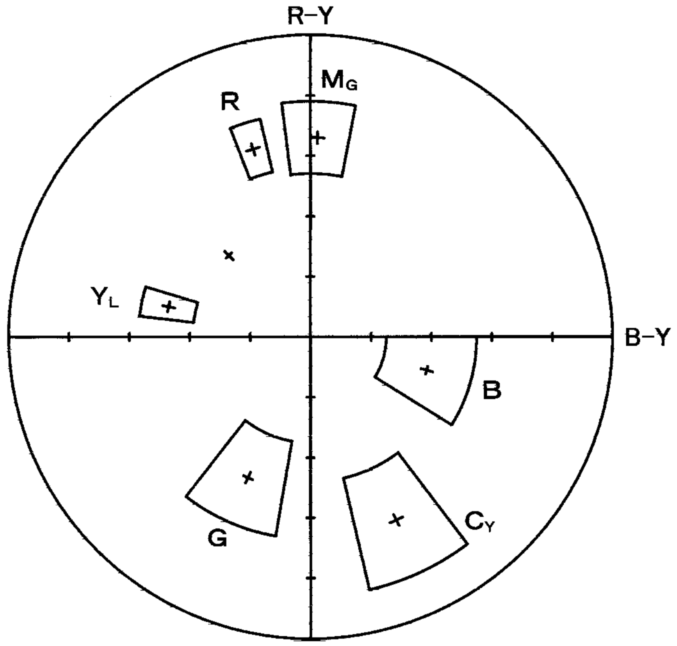
Take a copy CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

For NTSC model


R–Y
MG
R
YL
B–Y
B
G
CY

CCD-TR311

For PAL model


R–Y
MG
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CCD-TR311E/TR411E/TR412E/TR511E/TR512E/
TR640E/TR730E/TR840E/TR845E

9-974-039-11

Sony Corporation
Personal A&V Products Company

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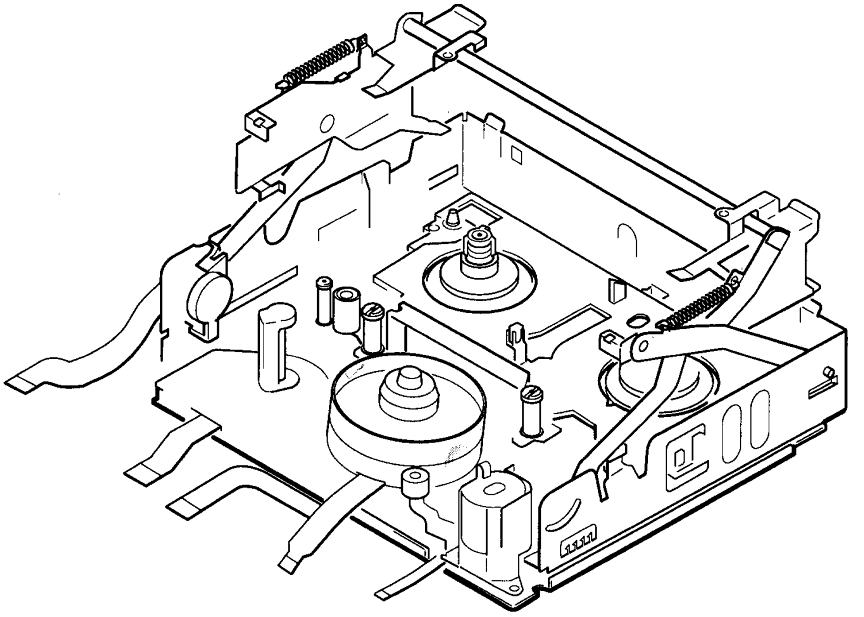
(Osaki East)

8mm Video MECHANICAL ADJUSTMENT MANUAL VII

B MECHANISM

Video8

Use this mechanical adjustment manual VII together with the service manual of the respective models.



8 MECHANISM DECK

SONY®

MICROFILM

TABLE OF CONTENTS

1. PREPARATION FOR CHECKING, ADJUSTING AND REPLACING THE MECHANISM

1-1. Cassette Compartment Block Assy ················ 3
1-2. How to Operate the Mechanism with the Cassette Compartment Block Assy Removed ·············· 4

2. PERIODIC CHECK AND MAINTENANCE ITEMS

2-1. Rotary Drum Assy Cleaning ···················· 5
2-2. Tape Path Cleaning ···························· 5
2-3. Periodic Check Items ·························· 6
2-4. Service Tool List ····························· 7

3. CHECKING, ADJUSTING AND REPLACING THE MECHANISM

3-1. HC Roller Block Assy ························· 8
3-2. Drum Assy ···································· 9
3-3. Drum Base Block Assy, Shaft Ground ············ 10
3-4. Gooseneck Retainer, Gooseneck Gear Assy ········ 11
3-5. LS Chassis Block Assy, Mechanical Chassis Block Assy ·················· 12
3-6. T Reel Table Assy, T Ratchet, T Soft Gear Block Assy ························ 15
3-7. Tension Regulator Band Assy, TG1 Arm Assy, S Reel Table Assy, S Ratchet, S Ratchet Release Plate, RVS Arm ················ 16
3-8. Pinch Arm Assy, TG4 Arm Block Assy ············ 17
3-9. LS Cam Plate, LS Guide Cover, Lid Opener, EJ Arm, Lock Guide ························· 18
3-10. Guide Base (S) and (T) Block Assemblies, Guide Rail ································· 19
3-11. DC Motor Assy (Loading) ······················ 21
3-12. Tension Regulator Plate 2, Relay Gear, M Slider Assy ································ 22
3-13. LS Arm, HC Drive Arm, Pinch Press Plate, Tension Regulator Plate ······················· 23
3-14. Cam Gear ···································· 24
3-15. GL Slider Assy, GL Arm ······················ 25
3-16. Rotary Switch ································ 26
3-17. Capstan Motor ································ 27
3-18. Tension Regulator Position Adjustment ············ 28
3-19. FWD Tape Hold -Back Tension Adjustment ········ 29

4. TAPE PATH ADJUSTMENT

4-1. Preparations for Adjustment ···················· 30
4-2. Tracking Adjustment ··························· 31
4-3. No. 4 Guide (TG-4) Adjustment ················ 31
4-4. CUE, REV Waveforms Check ···················· 32
4-5. Checks After Adjustments ······················ 32

5. EXPLODED VIEWS

5-1. Cassette Compartment Block Section ············· 34
5-2. LS Chassis Block Section ······················ 35
5-3. Mechanism Chassis Block Section ················ 36

6. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM ·················· 37

7. ELECTRICAL PARTS LIST ················ 38

For the mode selector operation, schematic diagram and parts list, refer to the Supplement-1 Manual.

1. PREPARATION FOR CHECKING, ADJUSTING AND REPLACING THE MECHANISM

For the disassembly procedures of the cabinet and printed wiring boards, please refer to the "DISASSEMBLY" section of the service manual of the respective models.
To re-assemble the mechanical parts which are disassembled in the following sections, perform the disassembly steps in reverse, unless otherwise specified.
The mechanisms are adjusted while set in the USE mode of operation. (Refer to the "Mode Selector Operation Procedure of the Supplement-1 Manual for how to enter the USE mode.)

1-1. Cassette Compartment Block Assy

1. Disassembly Procedure (Refer to Fig. 1.)

1) Set the mechanism to USE mode.
2) Confirm that the Cassette Compartment Block Assy is opened. If it is not opened, open it referring to Fig. a.
3) Remove the claws Ⓐ and Ⓑ of the Damper Assy ① from the chassis.
4) Remove the washer ② from the shaft of the Cassette Compartment near the Drum, next to the loading motor. Remove the shaft of the arm from the slot.
5) Remove the shaft of the arm from the slot Ⓒ of the Cassette Compartment near the Drum, next to the capstan motor. (Refer to Fig. b)
6) Lift up the Cassette Compartment at the Drum side in the direction of the arrow Ⓓ, and remove the arm shaft of the Cassette Compartment from the LS Chassis ④ near the Reel Tables. Remove the Cassette Compartment Assy ③ in the direction of the arrow Ⓔ.

2. Precautions During Re-Assembling

1) After attaching the Tension Spring, confirm that the straight portion at the end of the curved hook of the spring is positioned inside the mechanism. (Refer to Fig. c)
2) Confirm that the claw in the bottom of the shaft near the Reel Table of the Cassette Compartment is hooked to the LS Chassis.
3) Confirm that the claw of the Damper Assy is hooked to the LS Chassis. (Refer to Fig. b)

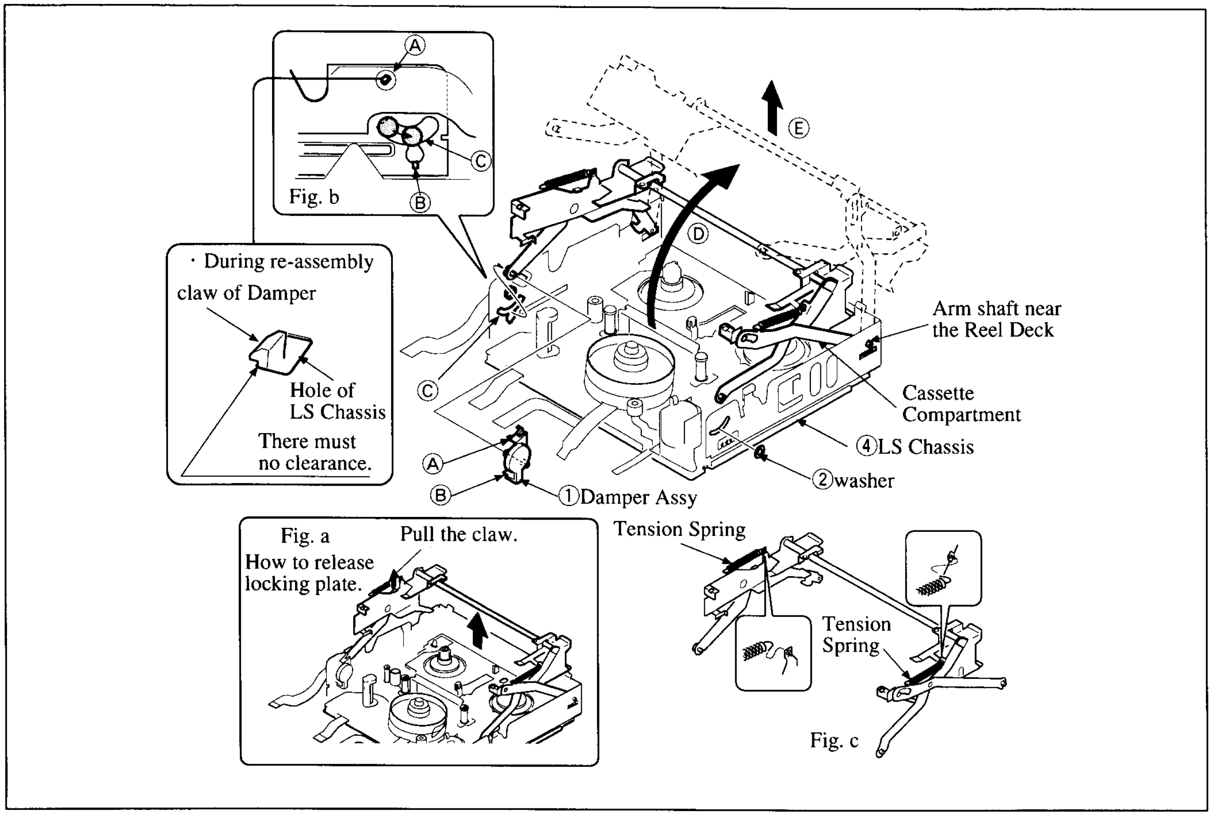

Ⓐ
Ⓒ
Fig. b
Ⓑ
Ⓔ
Ⓓ
· During re-assembly
claw of Damper
Hole of
LS Chassis
There must
no clearance.
Ⓒ
Ⓐ
Ⓑ
①Damper Assy
Arm shaft near
the Reel Deck
Cassette
Compartment
④LS Chassis
②washer
Fig. a
Pull the claw.
How to release
locking plate.
Tension Spring
Tension
Spring
Fig. c

Fig. 1

1-2. How to Operate the Mechanism with the Cassette Compartment Block Assy Removed

1. How to load a cassette tape (Refer to Fig. 2):

1) While referring to section "DISASSEMBLY" of the respective service manual, turn the main power on with the cabinet and camera section removed. (It enables to operate the mechanical deck.)
2) Connect the adjustment remote commander (Ref. No. J-10) and establish the TEST mode.

Example of establishing the TEST mode: model CCD-TR420E/TR440E. Select page: 6, address: 00, set data :01 and press the PAUSE button to release protection. Select page: 7, address: 01, set data: 01 and press the PAUSE button. After tape loading or other desired operations of mechanism are completed, be sure to perform the following: Select page: F, address: 01, set data :00 and press the PAUSE button. Select page: 6, address: 00, set data: 00 and press the PAUSE button.

3) Press the push-switch ① knob in the direction of the arrow which sets the machine into loading mode.

☆ PB, FF/REW and CUE/REV operations are possible.

2. How to establish RECORD mode:

1) Press pin of the push-switch ② (ON state) and keep the ON state by fixing with adhesive tape ③.
2) Turn the main power switch ON (select VTR or CAMERA position of in case of camera).
3) Set the RECORD switch to ON.
(When the TEST mode is selected, the rotation detection of the S and T reel tables is muted, and the top end sensor is disable which allow to run the tape.)

3. How to eject a cassette tape:

1) Press the EJECT switch to ON.

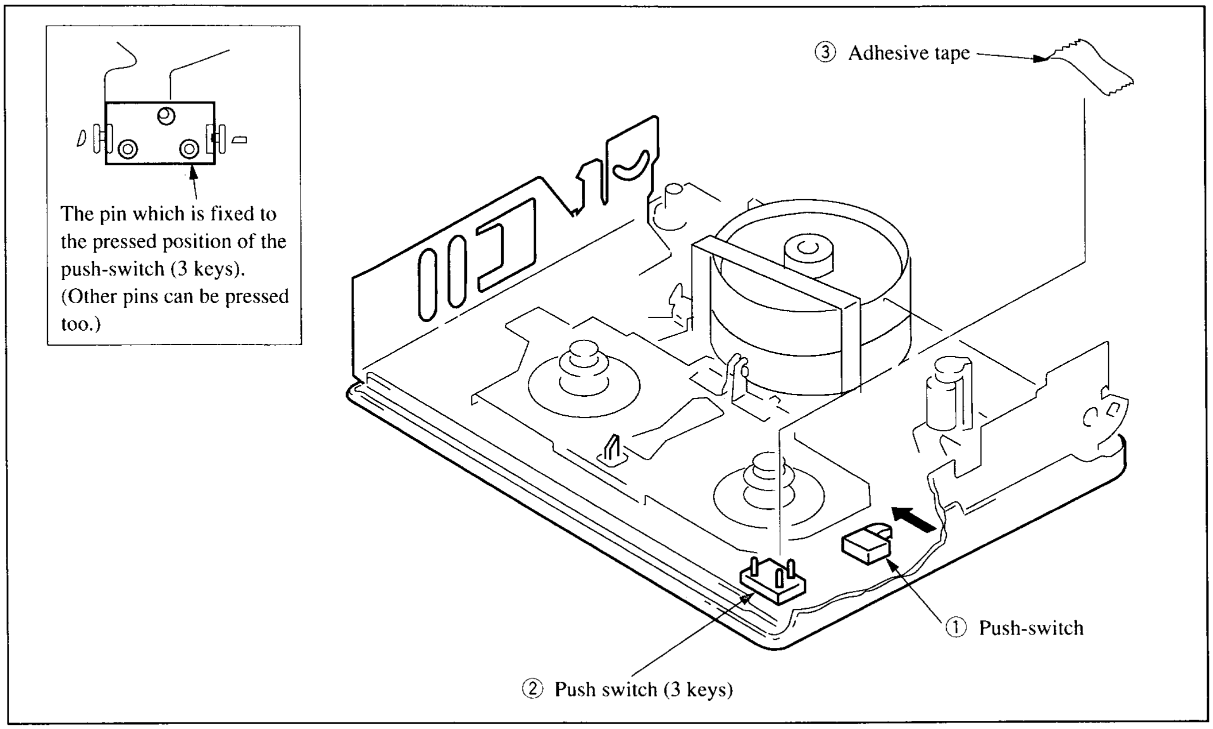

The pin which is fixed to the pressed position of the push-switch (3 keys). (Other pins can be pressed too.)
③ Adhesive tape
① Push-switch
② Push switch (3 keys)

Fig. 2

2. PERIODIC CHECK AND MAINTENANCE ITEMS

- Perform the following periodic check and maintenance to ensure that the machine functions continue to operate in peak condition, and to protect the tape and mechanism deck. After completing repair work, perform the following maintenance items regardless of how long the user's machine has been used.

2-1. Rotary Drum Assy Cleaning

Press the cleaning piece (Ref. No. J-2) moistened with cleaning fluid (Ref. No. J-1) lightly on the Rotary Drum Assy. Gently turn the Rotary Drum Assy slowly by hand counter-clockwise to clean the rotary drum.

Caution: Never attempt to turn the head drum motor by turning the main power ON. Also, never turn the drum clockwise by hand. In addition, never move the cleaning piece vertically with respect to the head tips, since this will damage them. Never clean the head drum in any way other than as described above.

2-2. Tape Path Cleaning (Refer to Fig. 3.)

1) Set the mechanism to USE mode. Clean the tape path system (TG-1, TG-2, TG-3, TG-4, pinch roller, capstan shaft) and lower drum using a very thin cotton swab (Ref. No. J-3) moistened with cleaning fluid.

Caution: Take care that the very thin cotton swab (Ref. No. J-3) does not touch the oil or grease of the various link mechanisms.

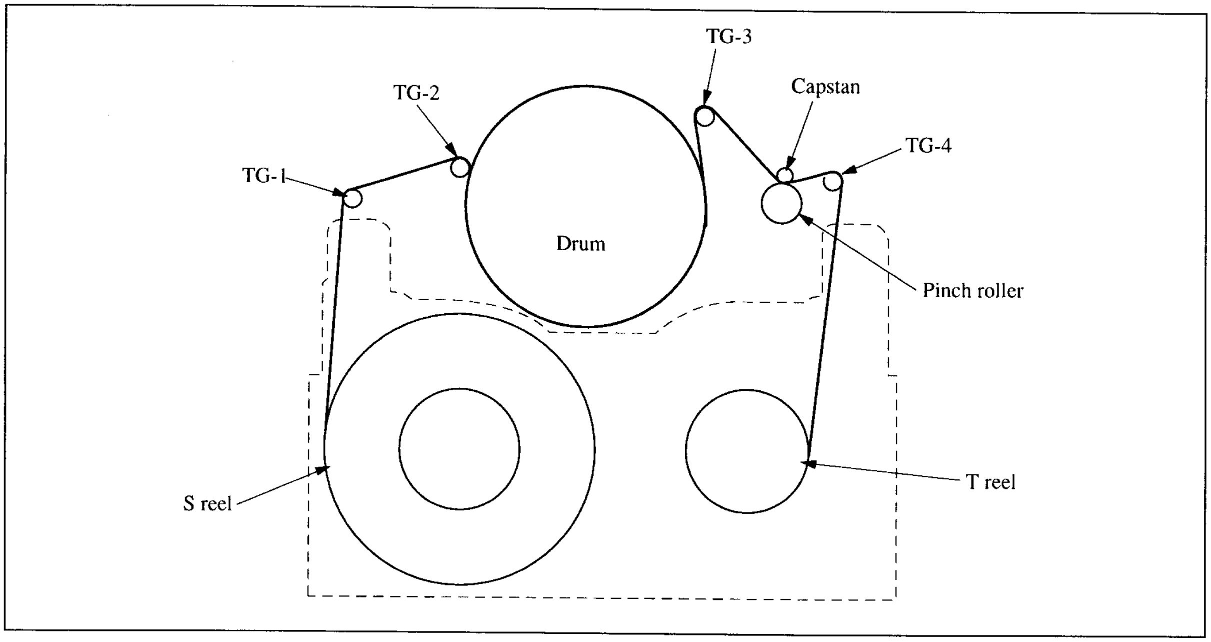


Fig. 3

2-3. Periodic Check Items

Maintenance and Inspection Points		Operating Hours										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Cleaning of tape running surface	○	○	○	○	○	○	○	○	○	○	Take care not to get oily.
	Cleaning and degaussing of Rotary Drum Assy	○	○	○	○	○	○	○	○	○	○	Take care not to get oily.
Drive System	Timing Belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-965-546-01
	Capstan Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Take great care not to let any oil contact the tape running surface.
	Change Gear Shaft Relay Pulley Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading Motor	—	☆	—	☆	—	☆	—	☆	—	☆	X-3945-401-1
Performance Check	Abnormal Sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Tape Hold-back Tension Measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake System	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD RVS } Torque Measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○Cleaning ◎Lubrication ☆Check

Note: When overhauling the machine, replace the parts while referring to the above table.

Note: Regarding oil

- Be sure to use the specified oil. (If the viscosity and other characteristics are different, various troubles may arise.)
  Oil: Sony part No. 7-661-018-18
  (Mitsubishi diamond oil hydro fluid NT-68)
- For the oil lubricated bearings, use oil free from dust or foreign materials. If the oil contains any dust or foreign material, the bearings will wear out quickly or burn out.
- One drop of oil is the amount of oil which forms at the tip of a stick of 2 mm diameter.

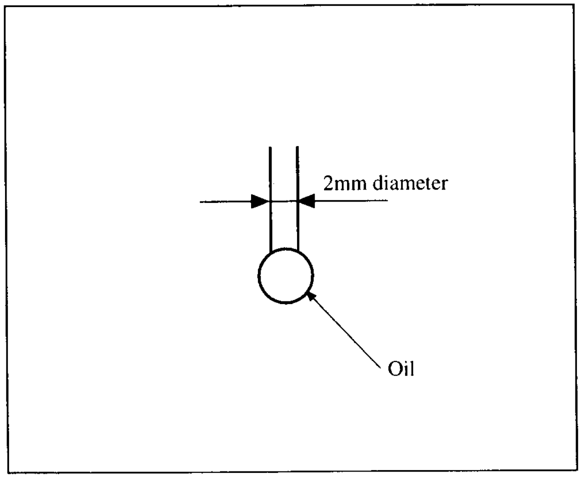


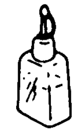
Fig. 4

2-4. Service Tool List

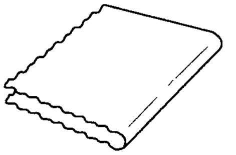
Ref. No.	Name	Parts Code	Tool Stamp	Applications
J-1	Cleaning fluid	Y-2031-001-0	—	
J-2	Cleaning piece	2-034-697-00	—	
J-3	Very thin cotton swab (made by Nippon Cotton Swab Inc. (P752D))		—	
J-4	Head demagnetizer	Commercially available	—	
J-5	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape (NTSC : WR5-1NP) (PAL : WR5-1CP)	8-967-995-02 8-967-995-07	—	Tape path
J-7	FWD/RVS take-up torque cassette	J-6080-824A	GD-2086	
J-8	Screwdriver for tape path adjustment	J-6082-026-A	—	For tape guide adjustment
J-9	FWD/BACK tension adjustment screwdriver	J-6082-187-A	—	
J-10	Remote commander for adjustment	J-6082-053-B	—	Tape path (Setting PATH mode)
J-11	MD process table	J-6082-166-A	—	
J-12	FLOIL Grease SG-941	7-662-001-39	—	
J-13	FLOIL Grease SG-055G	7-651-000-09	—	

Other equipment
- Oscilloscope
- Analog circuit tester (input impedance 20 kΩ)

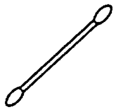
J-1



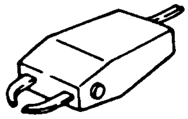
J-2



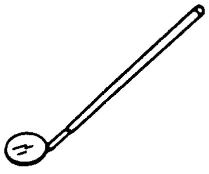
J-3



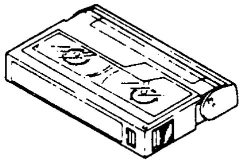
J-4



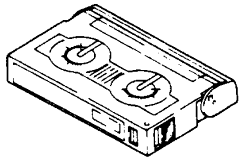
J-5



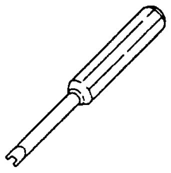
J-6



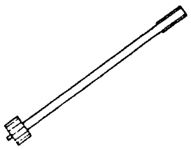
J-7



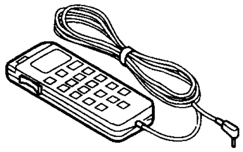
J-8



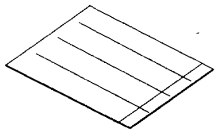
J-9



J-10

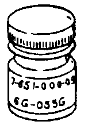


J-11



J-12

J-13



3. CHECKING, ADJUSTING AND REPLACING THE MECHANISM

3-1. HC Roller Block Assy (Refer to Fig. 5)

1. Disassembly Procedure

1) Remove the Torsion Spring ① from the cut-out Ⓐ of the motor holder. Hook it to the claw Ⓑ of the HC Arm.
2) Remove the HC Roller Block Assy in the direction shown by Ⓒ.
3) Remove the stop washer ② and remove the HC Roller Block Assy ③.

2. Precautions During Re-Assembly

1) After attaching the HC Roller Block Assy, confirm that both ends of the torsion spring are hooked to Ⓐ and Ⓓ.
2) Align the block so that the cut-out Ⓔ agrees with the rib Ⓕ.

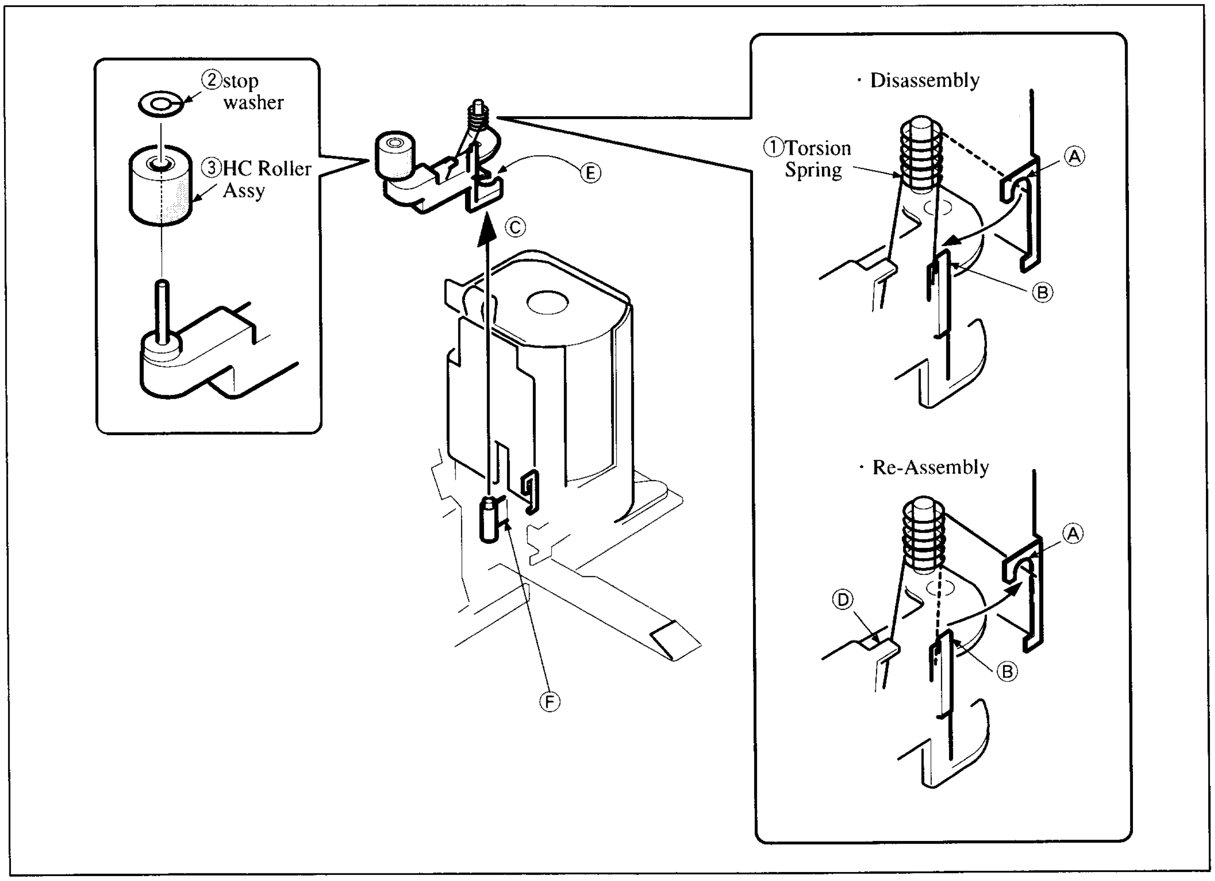

②stop washer
③HC Roller Assy
Ⓔ
Ⓒ
Ⓕ
· Disassembly
①Torsion Spring
Ⓐ
Ⓑ
· Re-Assembly
Ⓓ
Ⓐ
Ⓑ

Fig. 5

3-2. Drum Assy (Refer to Fig. 6)

1. Disassembly Procedure

1) Set the mechanism to USE mode.
2) Remove the three screws (M 1.4) ① and remove the Drum Assy ②.

Caution: Be careful not to touch the outer circumference of the drum. (Hold the portions Ⓐ and Ⓑ of the drum assy.)

2. Precautions During Re-Assembly

1) Be careful not to touch the outer circumference of the drum. (Hold the portions Ⓐ and Ⓑ of the drum assy.)
2) When tightening the three screws (M 1.4), tighten them in the order Ⓒ, then Ⓓ, then Ⓔ.
3) After attaching the Drum Assy, perform the steps in section "4. TAPE PATH ADJUSTMENT".

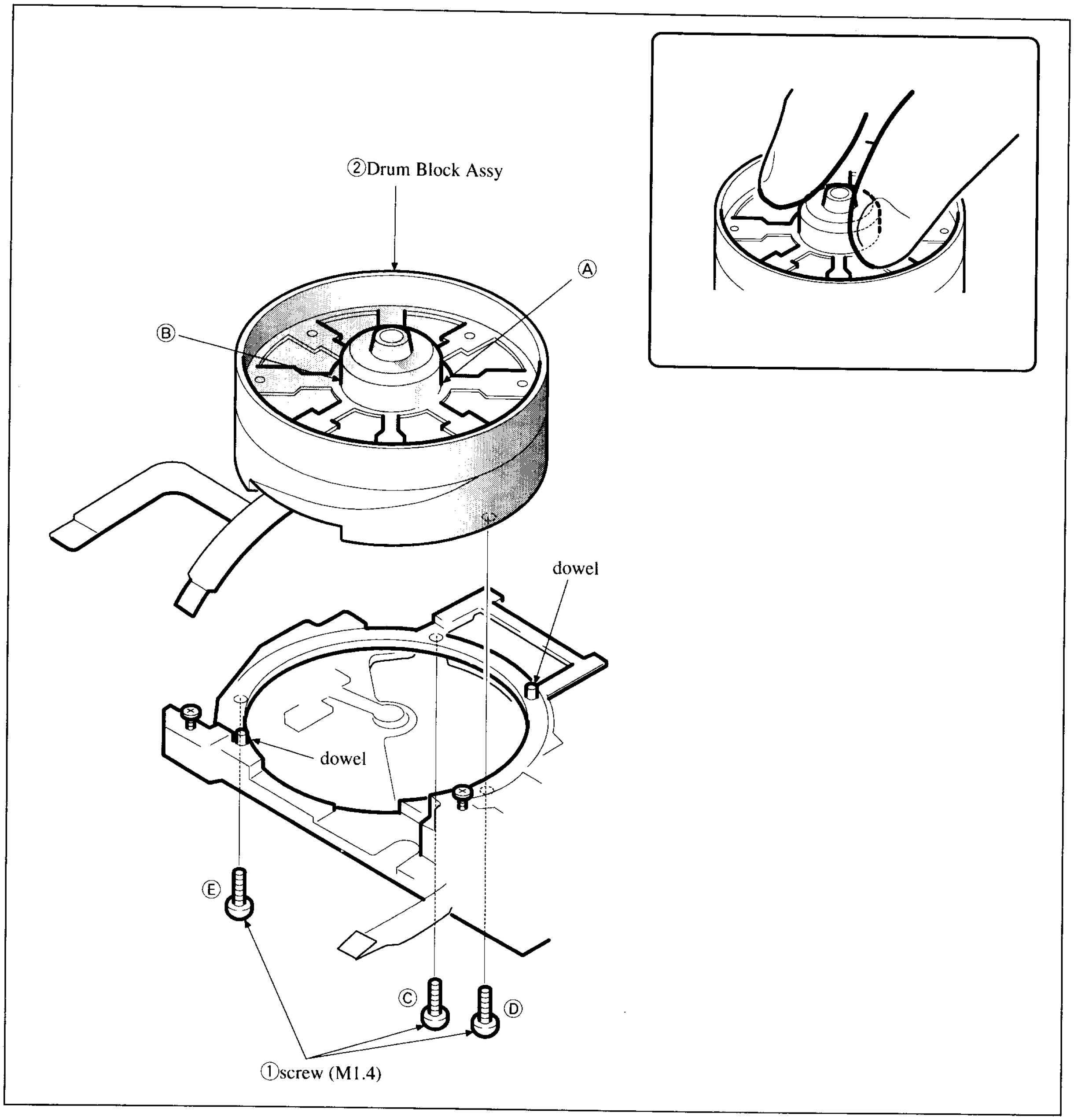


Fig. 6

3-3. Drum Base Block Assy, Shaft Ground (Refer to Fig. 7)

1. Disassembly Procedure

1) Remove the Drum Assy referring to section 3-2.
2) Remove the three screws (M 1.4×2.5) ① and remove the Drum Base Block Assy ②.
3) Remove the screw (M 1.7×1.4) ③ and remove the Shaft Ground ④.

Caution 1: Do not hold the spring portion of the Shaft Ground ④.

Caution 2: The loading motor can be removed while the mechanism is in this state. However, do not move any other mechanical parts (especially gears and cams around the rotary switch) when removing the loading motor. (Refer to 3-11.)

2. Precautions During Re-Assembly

1) Do not touch the spring portion of the Shaft Ground ④.
2) When tightening the three screws (M 1.4×2.5), tighten them in the order of Ⓐ, then Ⓑ, then Ⓒ.
3) After re-assembly is completed, perform the steps in section "4. TAPE PATH ADJUSTMENT".

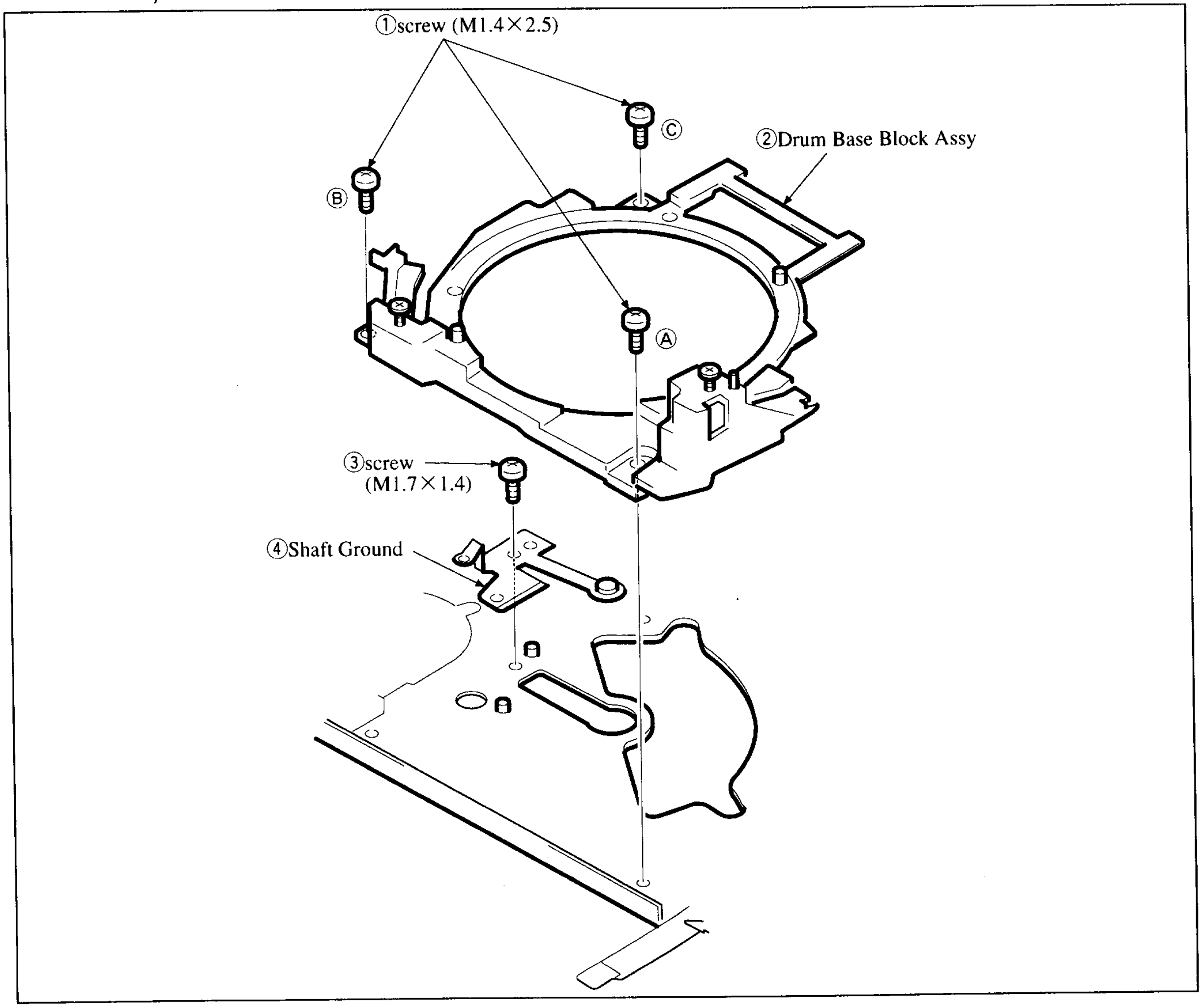


Fig. 7

3-4. Gooseneck Retainer, Gooseneck Gear Assy (Refer to Fig. 8)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the LED ① from the LED holder of the Gooseneck Retainer ③.
(Turn the flexible board 90° outside and remove it upward.)
3) Remove the three screws (M 1.4×2.5) ② and remove the Gooseneck Retainer ③.
4) Remove the stop washer ④ and remove the Gooseneck Gear Assy ⑤.

2. Precautions During Re-Assembly

1) When attaching the Gooseneck Retainer ③, take care that the Gooseneck Retainer ③ does not collide with the tension regulator band. (The tension regulator band must be located inside.)
2) Hook the T-side claw on the guide.

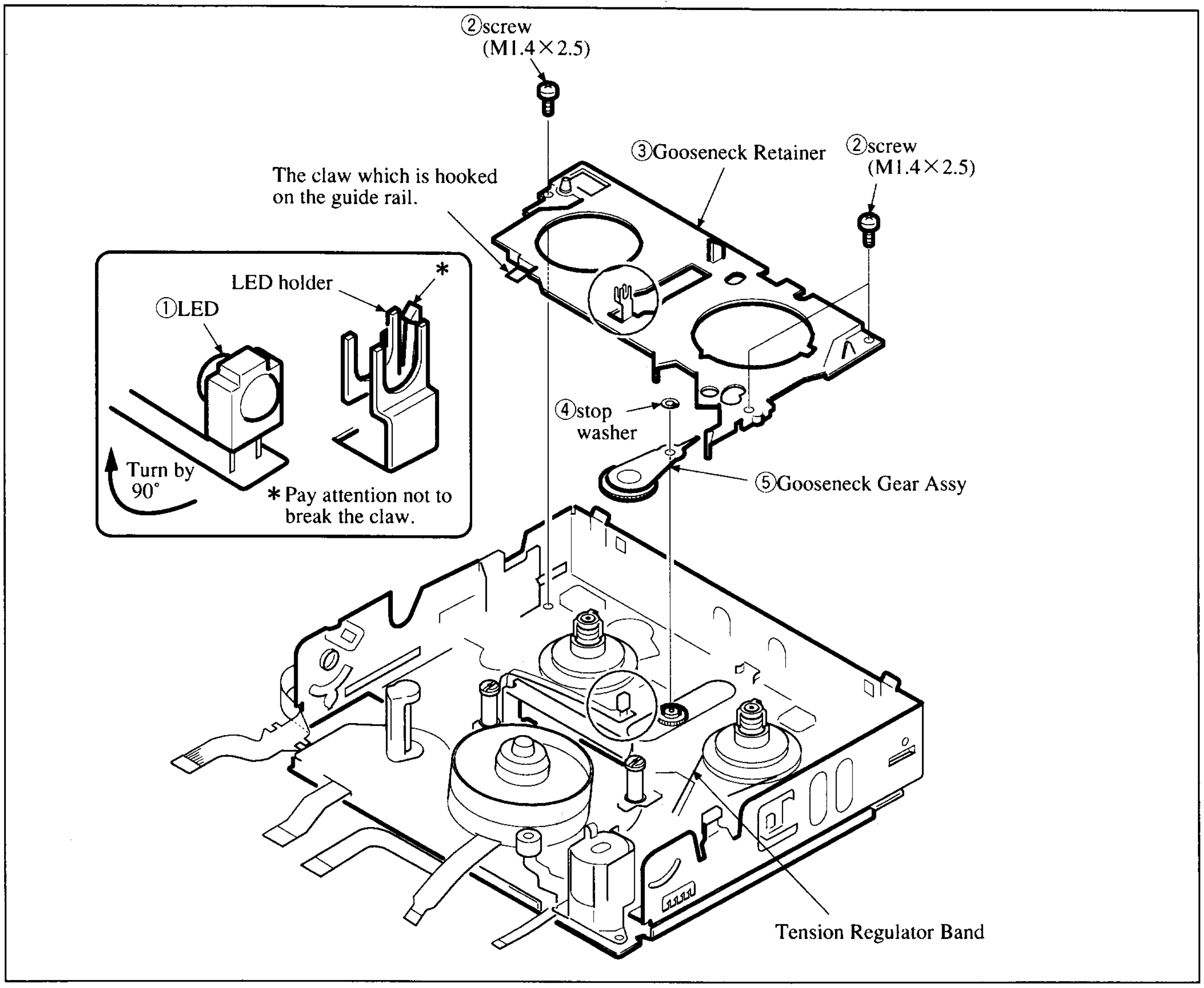

②screw
(M1.4×2.5)
③Gooseneck Retainer
②screw
(M1.4×2.5)
The claw which is hooked on the guide rail.
LED holder
*
①LED
Turn by 90°
* Pay attention not to break the claw.
④stop washer
⑤Gooseneck Gear Assy
Tension Regulator Band

Fig. 8

3-5. LS Chassis Block Assy, Mechanical Chassis Block Assy (Refer to Fig. 9)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the FP-221 flexible board ① from the flexible board holder.
4) Remove the stop ring E1.5 ②.
5) Remove the two screws (M 1.4×2.5) ③ and remove the LS Chassis Block Assy ④ from the Mechanical Chassis Block ⑤ in the direction of the arrow Ⓐ.

Note: The Tension Regulator Plate (2) can easily fall into the Mechanical Chassis Block Assy. Take care not to drop it.

2. Precautions During Re-Assembly

1) Before attaching the LS Chassis Block Assy, confirm that the respective phase-determining holes have been adjusted for correct phase. Also confirm that the specified locations of the Mechanical Chassis Block Assy and the LS Chassis Block Assy are coated with grease SG-055G (Ref. No. J-13). (Refer to Fig. a)
2) When attaching the LS Chassis Block Assy, insert the LS Cam Plate (on the LS chassis side) into the dowel (on the mechanical chassis side). Also insert the TG1 Cam Axis (on the LS chassis side) into the Tension Regulator Plate (2) (on the mechanical chassis side).
3) When attaching these block assemblies, attach them while pressing the TG-1 Arm Assy in the direction toward the TG-2 Guide. (Refer to Fig. b)
4) Pay attention that the TG-1 Arm is not floated.

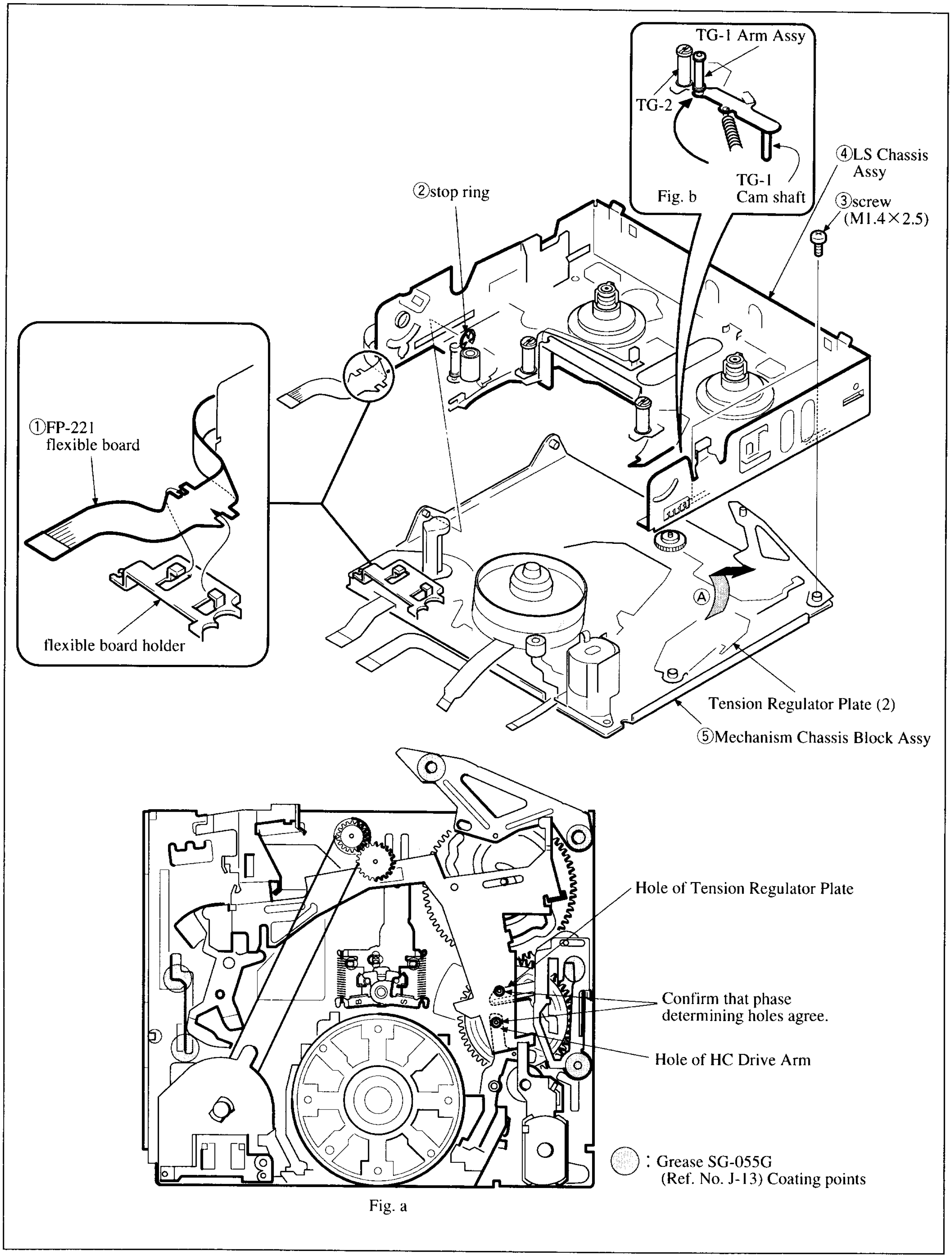

TG-1 Arm Assy
TG-2
TG-1 Cam shaft
④LS Chassis Assy
③screw (M1.4×2.5)
②stop ring
①FP-221 flexible board
flexible board holder
Ⓐ
Tension Regulator Plate (2)
⑤Mechanism Chassis Block Assy
Hole of Tension Regulator Plate
Confirm that phase determining holes agree.
Hole of HC Drive Arm
▨ : Grease SG-055G (Ref. No. J-13) Coating points

Fig. b

Fig. a

Fig. 9

- **PARTS CONSTITUTING THE LS CHASSIS.**

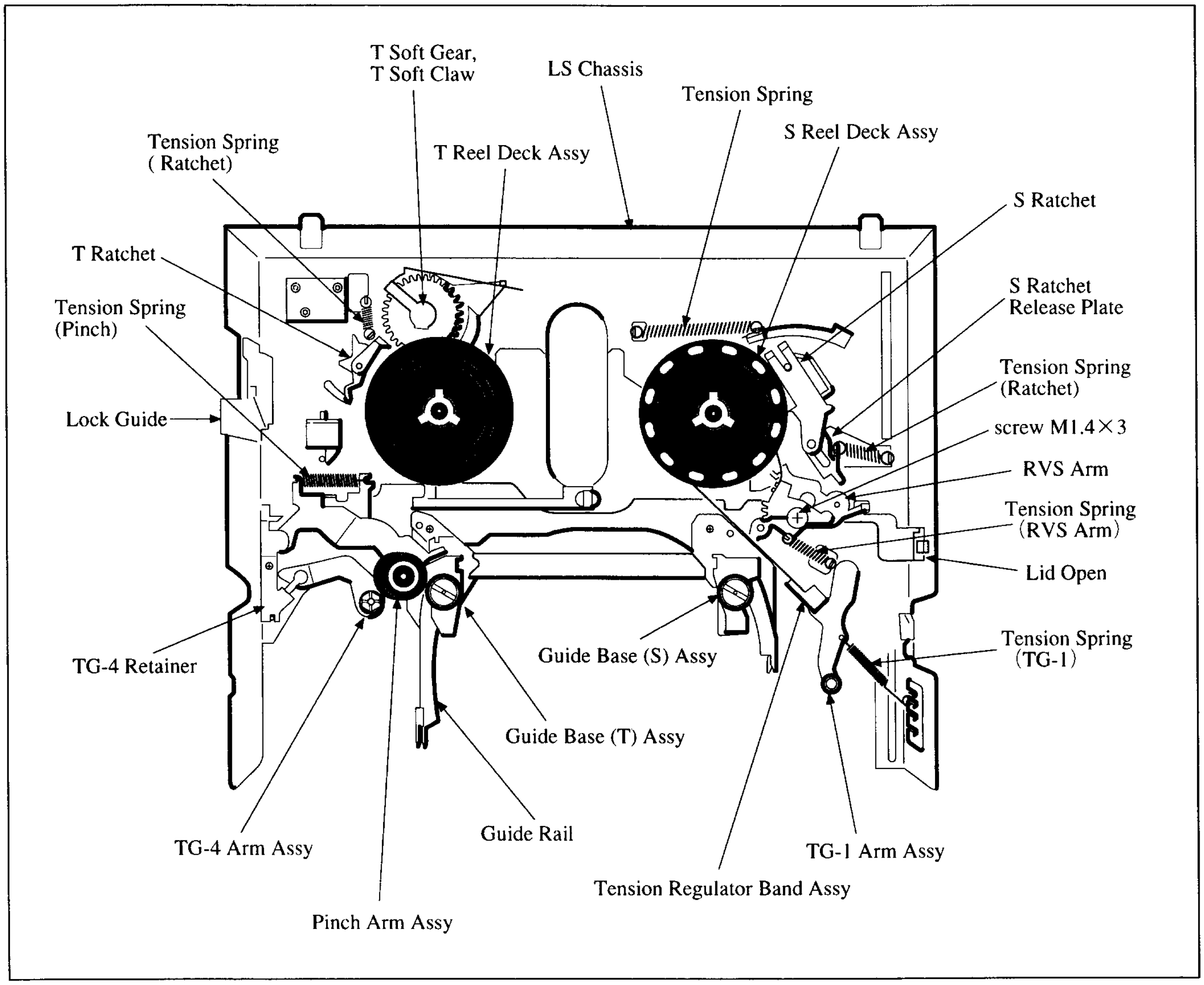

T Soft Gear,
T Soft Claw
LS Chassis
Tension Spring
S Reel Deck Assy
Tension Spring
(Ratchet)
T Reel Deck Assy
S Ratchet
T Ratchet
S Ratchet
Release Plate
Tension Spring
(Pinch)
Tension Spring
(Ratchet)
Lock Guide
screw M1.4×3
RVS Arm
Tension Spring
(RVS Arm)
Lid Open
Tension Spring
(TG-1)
TG-4 Retainer
Guide Base (S) Assy
Guide Base (T) Assy
Guide Rail
TG-4 Arm Assy
TG-1 Arm Assy
Tension Regulator Band Assy
Pinch Arm Assy

Fig. 10

3-6. T Reel Table Assy, T Ratchet, T Soft Gear Block Assy (Refer to Fig. 11)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the claw of the T Reel Deck Assy ① from the chassis and remove the T Reel Deck Assy from its shaft.
4) Remove the Tension Spring (Ratchet) ② from the LS Chassis and turn the T Ratchet ③ in the direction of the arrow Ⓐ and remove it .
5) Turn the T Soft Gear Block Assy ④ in the direction of the arrow Ⓑ and remove it .

2. Precautions During Re-Assembly

1) Confirm that the protrusions of both the T Soft Gear Block Assy and T Ratchet are securely locked to the LS Chassis.
2) Be careful not to deform the claw.

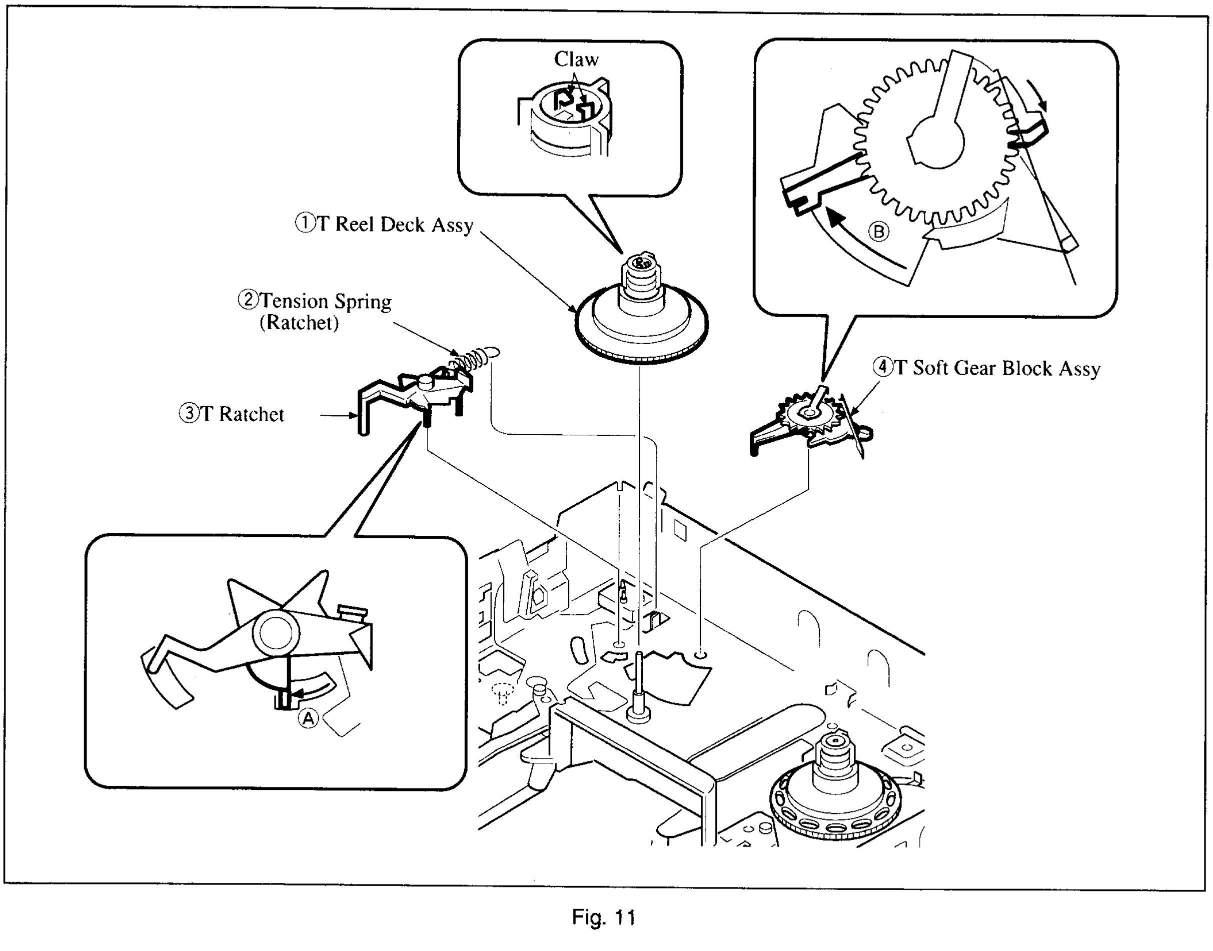


Fig. 11

3-7. Tension Regulator Band Assy, TG1 Arm Assy, S Reel Table Assy, S Ratchet, S Ratchet Release Plate, RVS Arm (Refer to Fig. 12)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the Tension Spring (TG1) ① from the LS Chassis.
4) Remove the screw (M 1.4×3) ② and remove the Tension Adjustment Block of the Tension Regulator Band Assy ④ form RVS Arm.
5) Release the S Ratchet ⑥ in the direction of the arrow Ⓐ and remove the Tension Regulator Band (while taking care not to bend the band) from the S Reel.
6) Remove the TG1 Arm Assy ③ from the LS Chassis, then remove the claw of the Tension Regulator Band Assy ④. (Refer to Fig. a)
7) Remove the claw of the S Reel Deck Assy ⑤ from the chassis and remove the S Reel Deck Assy from its shaft.
8) Remove the S Ratchet ⑥. (Because it is press-fitted, insert tip of screwdriver into the center of rotation and remove it.
9) Remove the Tension Spring (ratchet) ⑦ from the LS Chassis and remove the S Ratchet Release Plate ⑧.
10) Remove the Tension Spring ⑨ from the LS Chassis and remove the RVS Arm ⑩ by turning it..

2. Precautions During Re-Assembly

1) Confirm that the dowel of the S Ratchet Release Plate is inserted into the groove of the S ratchet and confirm that the center of the ratchet is press-fitted into bottom of the shaft. (It can be used again.)
2) When attaching the Tension Regulator Band Assy, take care not to bend it.
3) Pay attention that oil or grease is not spit on the surface of the Tension Regulated Band. (Pay attention also not to touch it with hand directly.)
4) Confirm that the tension regulator band is correctly inserted into the groove of the S Reel Deck Assy ⑤. (Refer to Fig. b)
5) When securing the Tension Adjustment Block using the screw, press it toward the position which gives the least tension, then tighten the fixing screw.
6) Before attaching the TG1 Arm Assy, coat the LS Chassis TG1 boss with oil (1/2 drop).
7) Do not touch the tape guide of the TG1 Arm Assy with bare hands.
8) Confirm that the claw of the S Reel Deck Assy is not deformed.

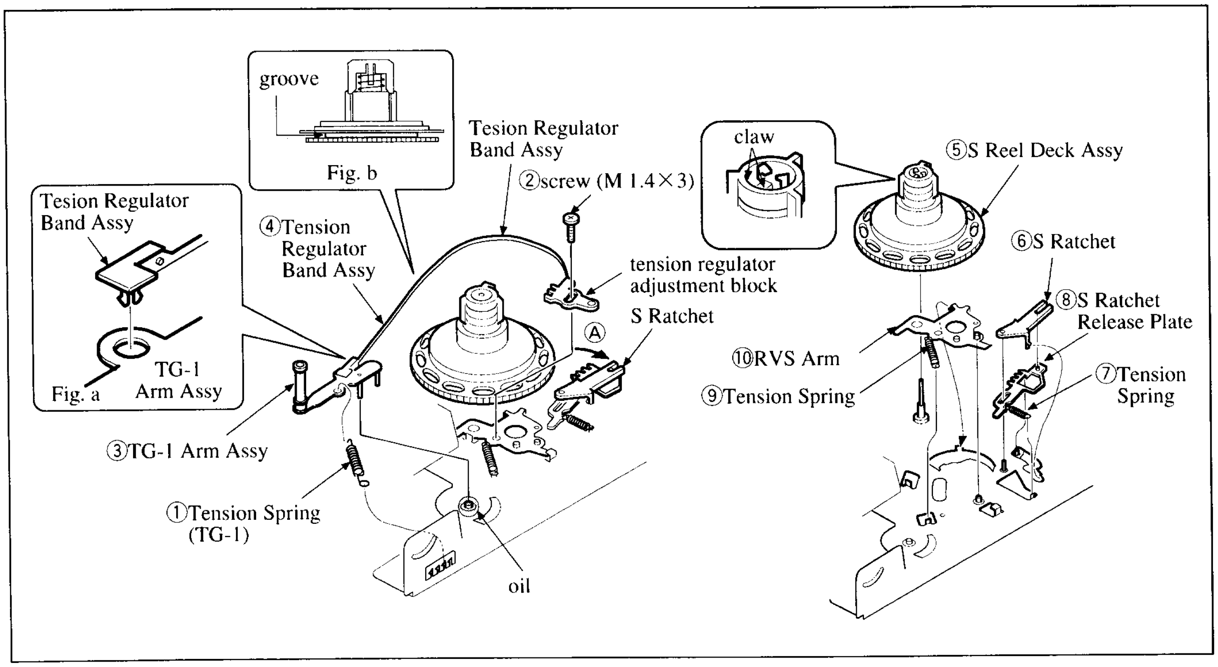

groove
Fig. b
Tesion Regulator Band Assy
②screw (M 1.4×3)
claw
⑤S Reel Deck Assy
Tesion Regulator Band Assy
④Tension Regulator Band Assy
TG-1 Arm Assy
Fig. a
tension regulator adjustment block
S Ratchet
Ⓐ
⑥S Ratchet
⑧S Ratchet Release Plate
⑩RVS Arm
⑨Tension Spring
⑦Tension Spring
③TG-1 Arm Assy
①Tension Spring (TG-1)
oil

Fig. 12

3-8. Pinch Arm Assy, TG4 Arm Block Assy (Refer to Fig. 13)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) Remove the Torsion Spring (pinch) ① from an end of Pinch Arm and hook it on the cut-out Ⓐ of the LS Chassis.
5) Remove the screw (M 1.4×2.5) ② and remove the TG4 Retainer ③.
6) Remove the TG4 Arm Block Assy ④ and remove the Torsion Spring ⑤ while paying attention to the Torsion Spring ⑤.
7) Remove the Pinch Arm Assy ⑥. (Caution: The Pinch Press Roller is easy to drop. Pay attention not to drop it.)
8) Remove the Torsion Spring (pinch) ① from the cut-out of the LS Chassis in the order of Ⓐ then Ⓑ.

2. Precautions During Re-Assembly

1) Before attaching these parts, coat the LS chassis pinch arm boss and TG4 arm boss with grease SG-055G (Ref. No. J-13).
2) Do not touch the tape guide of the TG4 Arm Block Assy and roller of the Pinch Arm Assy with bare hand.
3) After coating the Pinch Press Shaft of the Pinch Arm Assy ③ with grease SG-055G (Ref. No. J-13), attach the Pinch Press Roller.

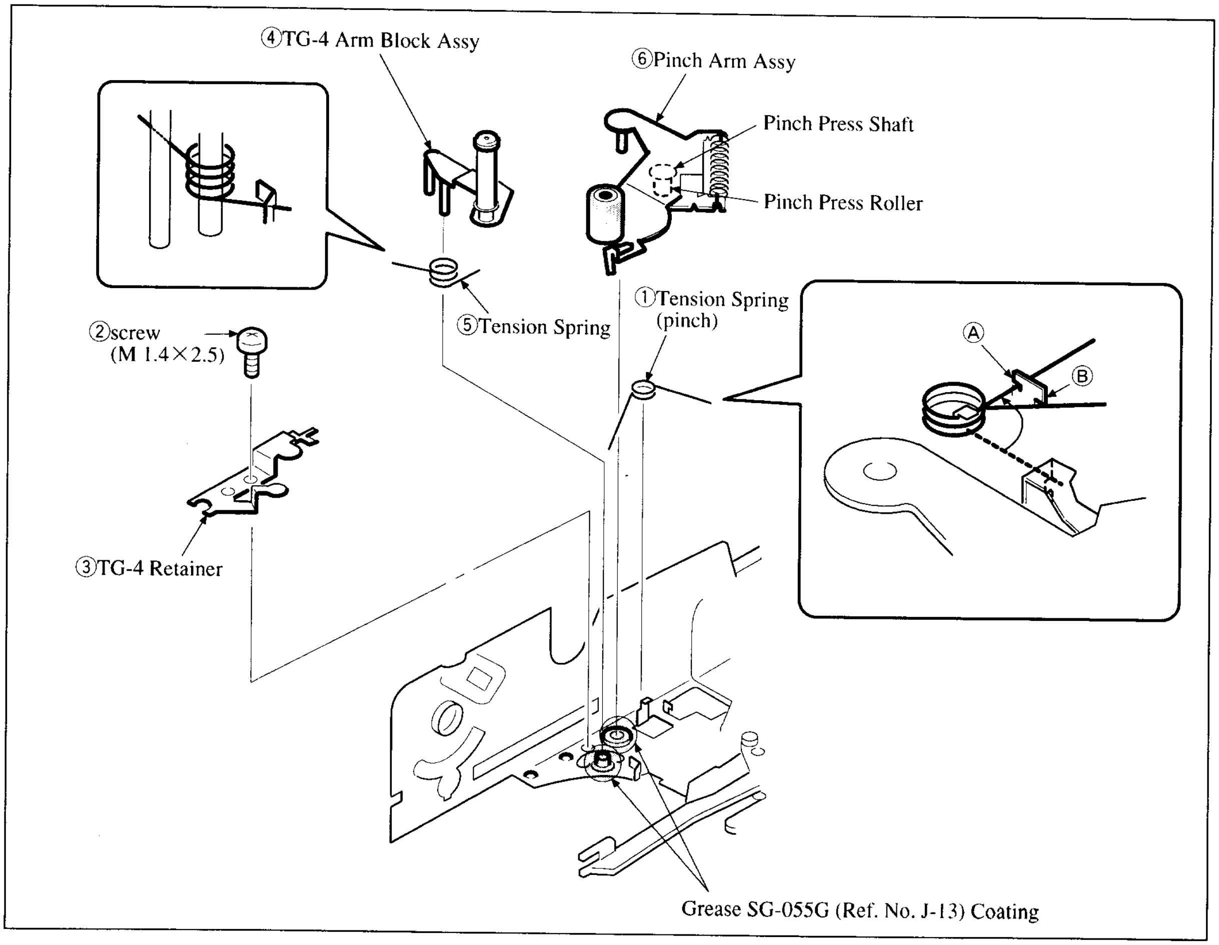

④TG-4 Arm Block Assy
⑥Pinch Arm Assy
Pinch Press Shaft
Pinch Press Roller
⑤Tension Spring
①Tension Spring (pinch)
Ⓐ
Ⓑ
②screw (M 1.4×2.5)
③TG-4 Retainer
Grease SG-055G (Ref. No. J-13) Coating

Fig. 13

3-9. LS Cam Plate, LS Guide Cover, Lid Opener, EJ Arm, Lock Guide (Refer to Fig. 14)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) Remove the two screws (M 1.4×2.5) ① and remove the the LS Cam Plate ②.
   In this state, write a mark on the screw ① and on the LS Chassis indicating the position of the LS Cam Plate which helps during re-assembly.
5) Remove the LS Guide Cover ③.
6) Remove the Lock Guide ④ in the upward direction. (Refer to Fig. a)
7) Remove the Lid Open ⑤ in the direction of the arrow Ⓒ while pushing Ⓑ portion .
8) Remove the EJ Arm ⑥ . (The EJ Arm ⑥ is press-fitted. If the EJ Arm ⑥ is not damaged, it is not necessary to replace.)

2. Precautions During Re-Assembly

1) After the captioned parts are attached, confirm that the respective claws and dowels are engaged completely.
2) If the EJ Arm ⑥ is removed, be sure to replace it with the new replacement EJ Arm.
3) If any mark is not written when removing the LS Cam Plate ②, adjust and attack it as shown in Fig. b.

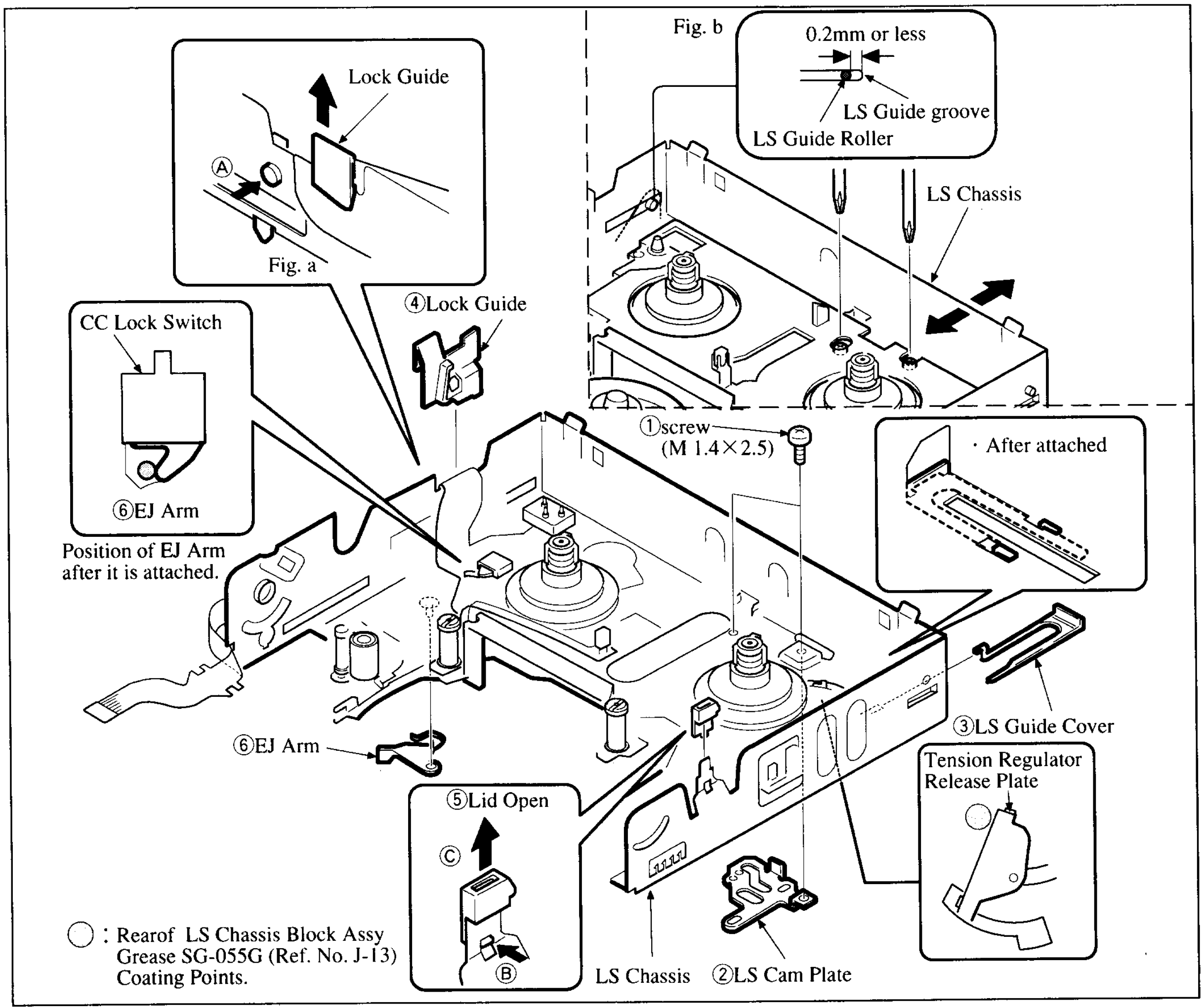

Lock Guide
Ⓐ
Fig. a
CC Lock Switch
④Lock Guide
⑥EJ Arm
Position of EJ Arm after it is attached.
Fig. b
0.2mm or less
LS Guide groove
LS Guide Roller
LS Chassis
①screw (M 1.4×2.5)
· After attached
③LS Guide Cover
Tension Regulator Release Plate
⑥EJ Arm
⑤Lid Open
Ⓒ
Ⓑ
○ : Rearof LS Chassis Block Assy Grease SG-055G (Ref. No. J-13) Coating Points.
LS Chassis
②LS Cam Plate

Fig. 14

3-10. Guide Base (S) and (T) Block Assemblies, Guide Rail (Refer to Fig. 15)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) While pushing the GB Stoppers (S) and (T) in the direction of arrow Ⓐ, press the guide arm in the direction of the arrow Ⓑ, and turn the Guide Base (S) and (T) Block Assemblies : ① and ② in the direction of the arrow Ⓒ respectively, and remove them.
5) Remove the two screws (M 1.4×2.5) ③ and remove the the Guide Rail Assy ④.
6) Remove the Stopper (S) and (T) : ⑤ and ⑥, then remove the GB Stopper S and T: ⑦ and ⑧.

2. Precautions During Re-Assembly

1) Pay attention not to deform the Guide Rail.
2) Do not touch the tape guide of the Guide Base (S) and (T) Block Assemblies with bare hand.
3) Pay attention not to deform the Stoppers (S) and (T).
4) When attaching the Guide Base (S) and (T) Blocks to the Guide Rail, move back the Guide Bases until the GB Stoppers (S) and (T) are locked. ("Click" sounds.)
5) After the captioned parts are attached, perform section "4. TAPE PATH ADJUSTMENT".

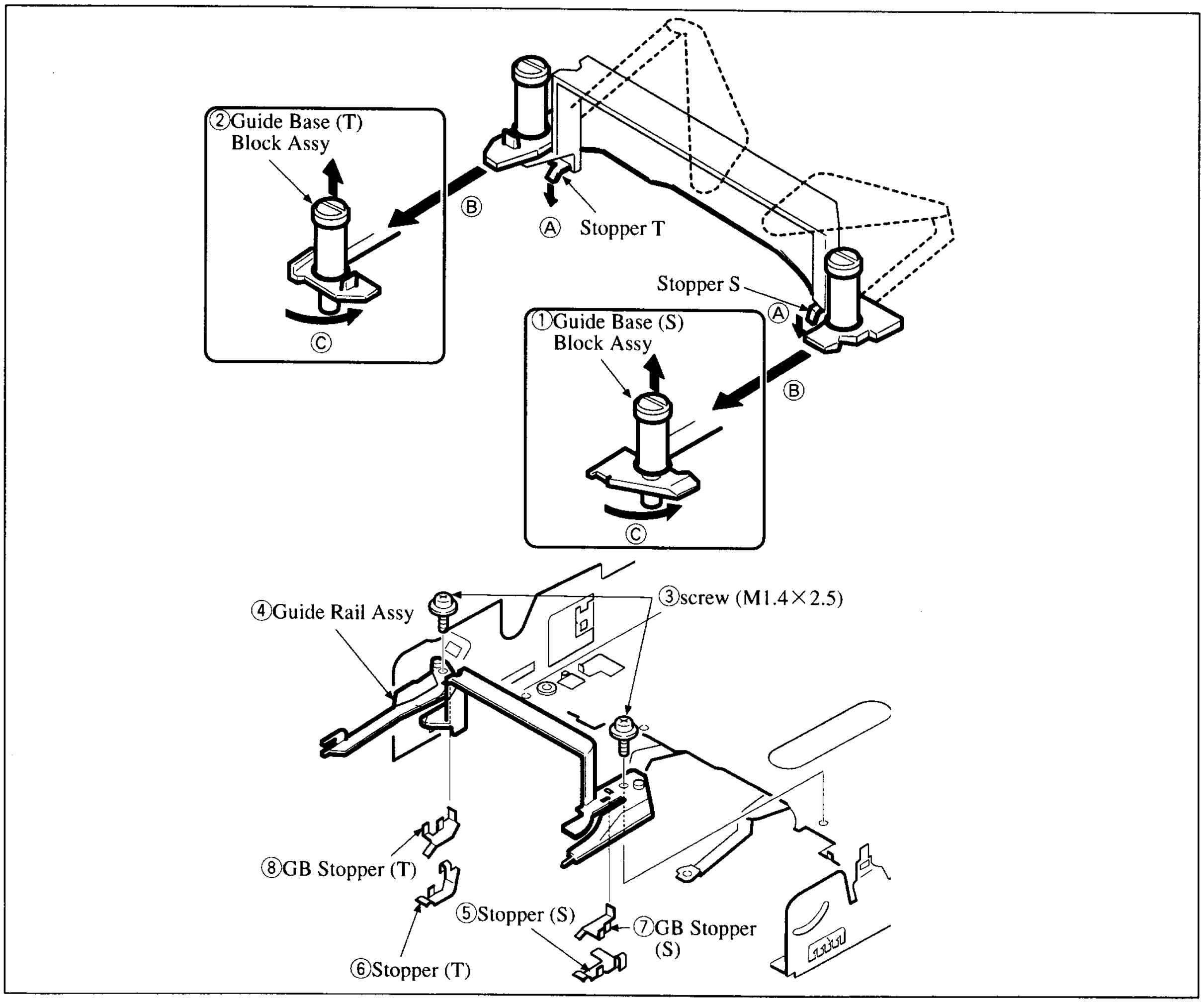
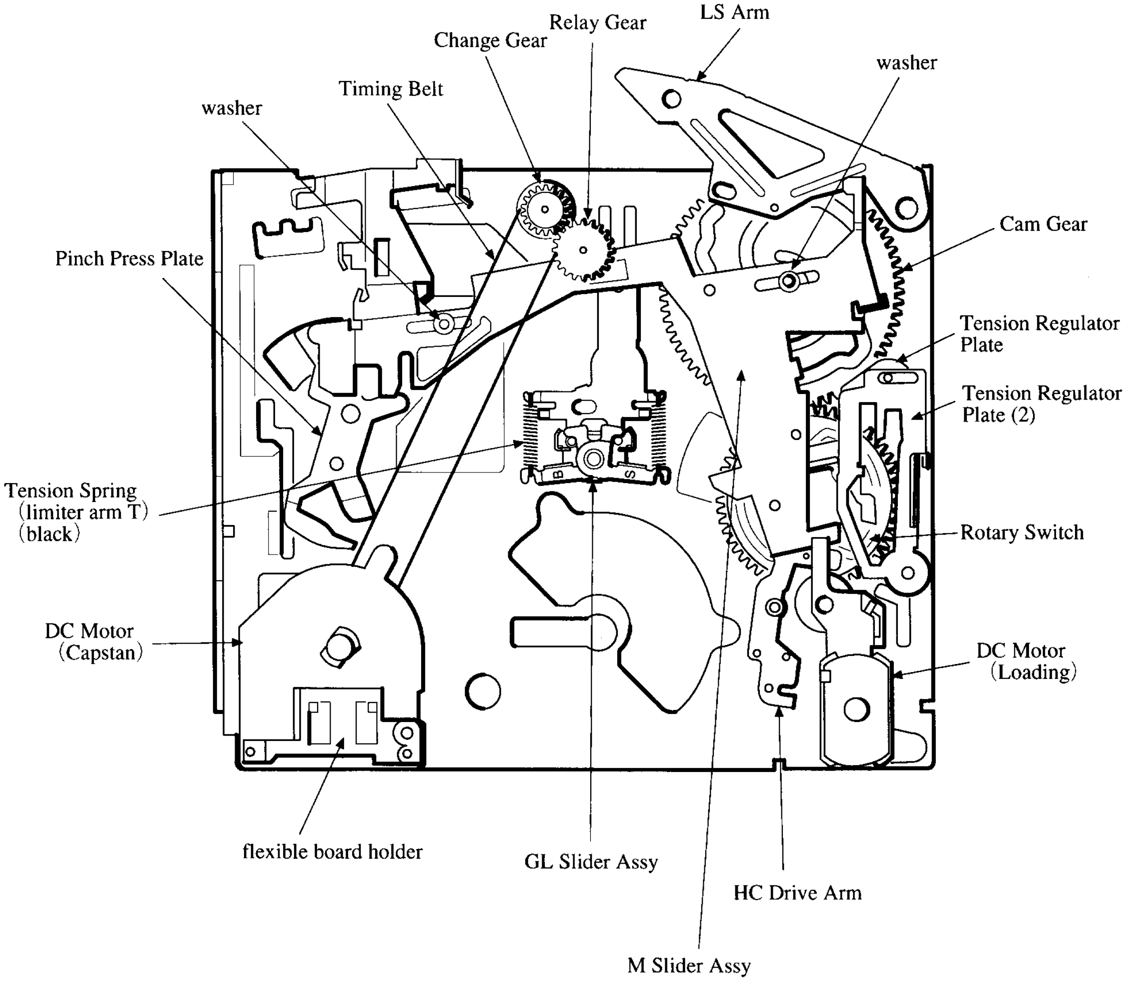

②Guide Base (T)
Block Assy
Ⓑ
Ⓐ Stopper T
Ⓒ
Stopper S
Ⓐ
①Guide Base (S)
Block Assy
Ⓑ
Ⓒ
④Guide Rail Assy
③screw (M1.4×2.5)
⑧GB Stopper (T)
⑤Stopper (S)
⑦GB Stopper
(S)
⑥Stopper (T)

Fig. 15

- **PARTS CONSTITUTING THE MECHANISM CHASSIS**



Relay Gear
LS Arm
Change Gear
washer
Timing Belt
washer
Cam Gear
Pinch Press Plate
Tension Regulator Plate
Tension Regulator Plate (2)
Tension Spring (limiter arm T) (black)
Rotary Switch
DC Motor (Capstan)
DC Motor (Loading)
flexible board holder
GL Slider Assy
HC Drive Arm
M Slider Assy

Fig.16

3-11. DC Motor Assy (Loading)
(Refer to Fig. 17)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove soldering from the Ⓐ portion.
8) Remove the screw (M 1.4×2.5) ① and remove the Motor Holder Block Assy ② from the mechanism chassis along with the claw beneath the Motor Holder Block Assy as shown by the arrow Ⓑ.
9) Remove the Motor Shield ③ in the direction of the arrow Ⓒ (by opening the two ★ star marked points).
10) Release the claw on top of the Motor Holder ⑤ and remove the DC Motor Assy ④ in the direction of the arrow Ⓓ.
11) Remove the Motor Holder Sleeve ⑥, Gear A⑦ and Worm Shaft ⑧ in this order.

2. Precautions During Re-Assembly

1) Before attaching the Gear A ⑥, coat the Retainer Shaft Ⓔ with grease SG-055G (Ref. No. J-13).
2) After assembling the Motor Holder Block Assy, coat the six locations shown by Fig. a with grease SG-055G (Ref. No. J-13).
3) The HC Drive Arm is easy to drop. Confirm that it is attacked referring to Fig. 19.

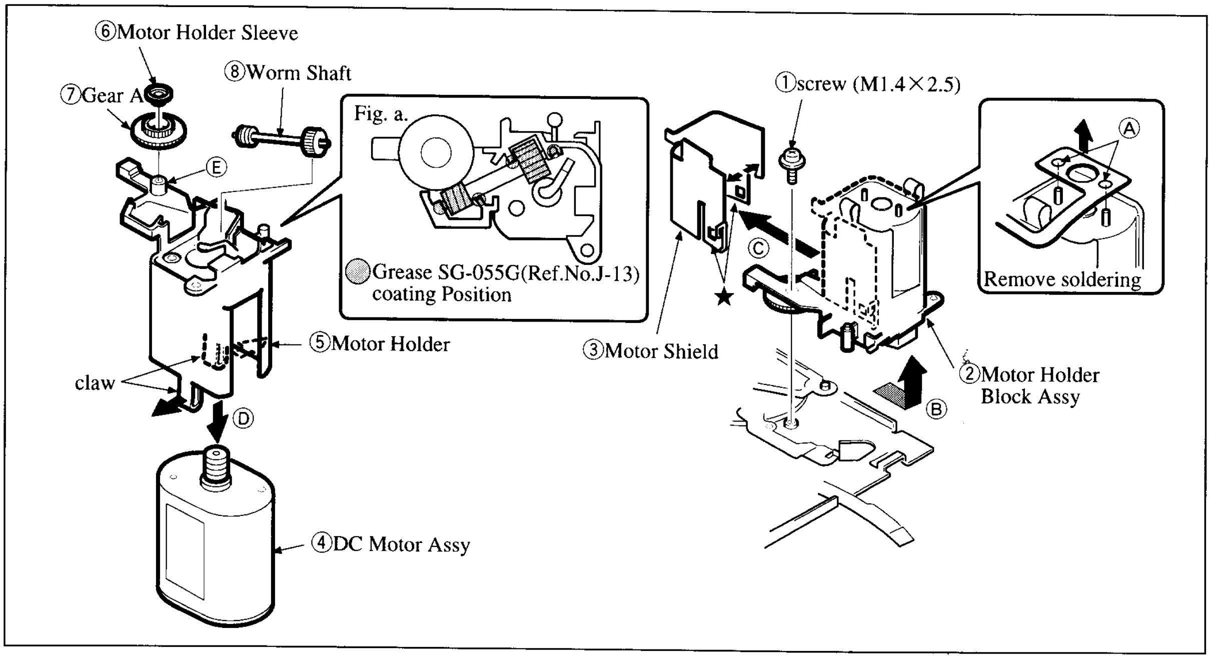

⑥Motor Holder Sleeve
⑦Gear A
⑧Worm Shaft
Ⓔ
Fig. a.
●Grease SG-055G(Ref.No.J-13) coating Position
⑤Motor Holder
claw
Ⓓ
④DC Motor Assy
③Motor Shield
★
Ⓒ
①screw (M1.4×2.5)
Ⓐ
Remove soldering
②Motor Holder Block Assy
Ⓑ

Fig. 17

3-12. Tension Regulator Plate 2, Relay Gear, M Slider Assy (Refer to Fig. 18)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC motor referring to section 3-11.
8) Remove the Tension Regulator Plate 2 ①.
9) Remove the Relay Gear ②.
10) Remove the two washers ③. Remove the M Slider Assy ④. At the point, confirm that the LS Roller ⑤ is not dropped.

2. Precautions During Re-Assembly

1) Before attaching the M Slider Assy ④, coat the LS Roller Shaft Ⓐ on the back of the M Slider Assy, the Pinch Press Plate Shaft Ⓑ and the mechanism chassis M Slider Axis Ⓒ with grease SG-055G (Ref. No. J-13). (Refer to Fig. b)
2) While confirming the phase-determining holes, attach the M Slider Assy ④ while paying attention to the claw.
3) Attach the Tension Regulator Plate 2 ① inside the Tension Regulator Plate. (Refer to the asterisk * Marked portion of Fig. a)
4) Before attaching the Relay Gear ②, coat the mechanism chassis Relay Gear Axis Ⓓ with grease SG-055G (Ref. No. J-13).

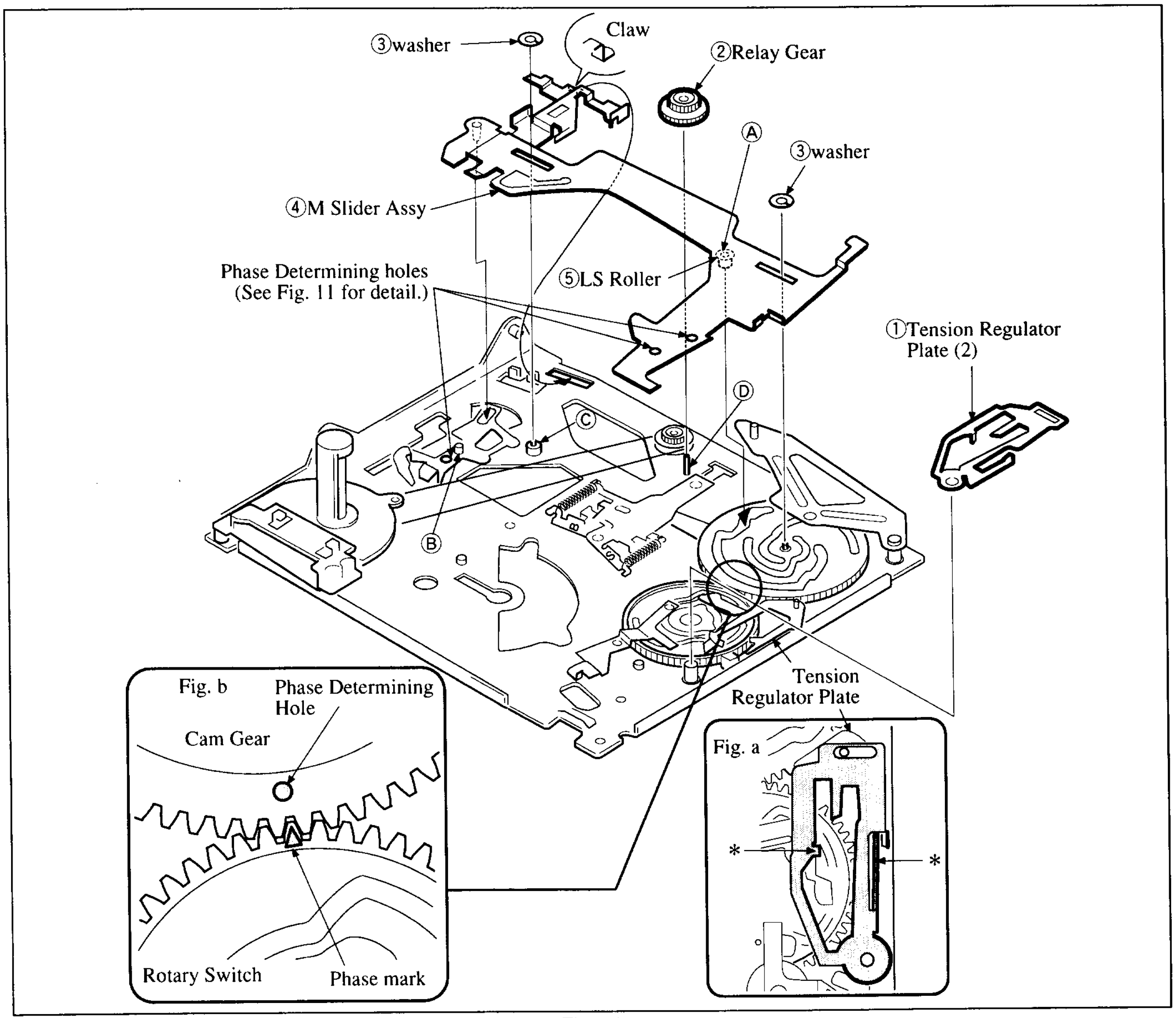

③washer
Claw
②Relay Gear
Ⓐ
③washer
④M Slider Assy
Phase Determining holes
(See Fig. 11 for detail.)
⑤LS Roller
①Tension Regulator Plate (2)
Ⓓ
Ⓒ
Ⓑ
Tension Regulator Plate
Fig. b
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
Fig. a
*
*

Fig. 18

3-13. LS Arm, HC Drive Arm, Pinch Press Plate, Tension Regulator Plate (Refer to Fig. 19)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm ①. At this point, confirm that the LS Roller ② is not dropped.
10) Remove the HC Drive Arm ③, Pinch Press Plate ④ and Tension Regulator Plate ⑤.

2. Precautions During Re-Assembly

1) Before attaching the captioned parts, confirm that phases of the Cam Gear and the Rotary Switch agree. (See Fig. a.)
2) Insert the dowel of the Tension Regulator Plate ⑤ into the groove outside the rotary switch.
3) Before attaching the Pinch Press Plate ④, check for grease on the mechanism chassis Pinch Press Plate Shaft Ⓐ. If grease cannot be found, coat it with grease SG-055G (Ref. No. J-13). After attaching the Pinch Press Plate ④, align its phase hole until it agrees with the phase-determining hole on the mechanism chassis.
4) Insert the dowel of the HC Drive Arm ③ into the groove inside the rotary switch.
5) Before attaching the LS Arm ①, coat the LS roller shaft of the LS Arm ① with grease SG-055G (Ref. No. J-13).

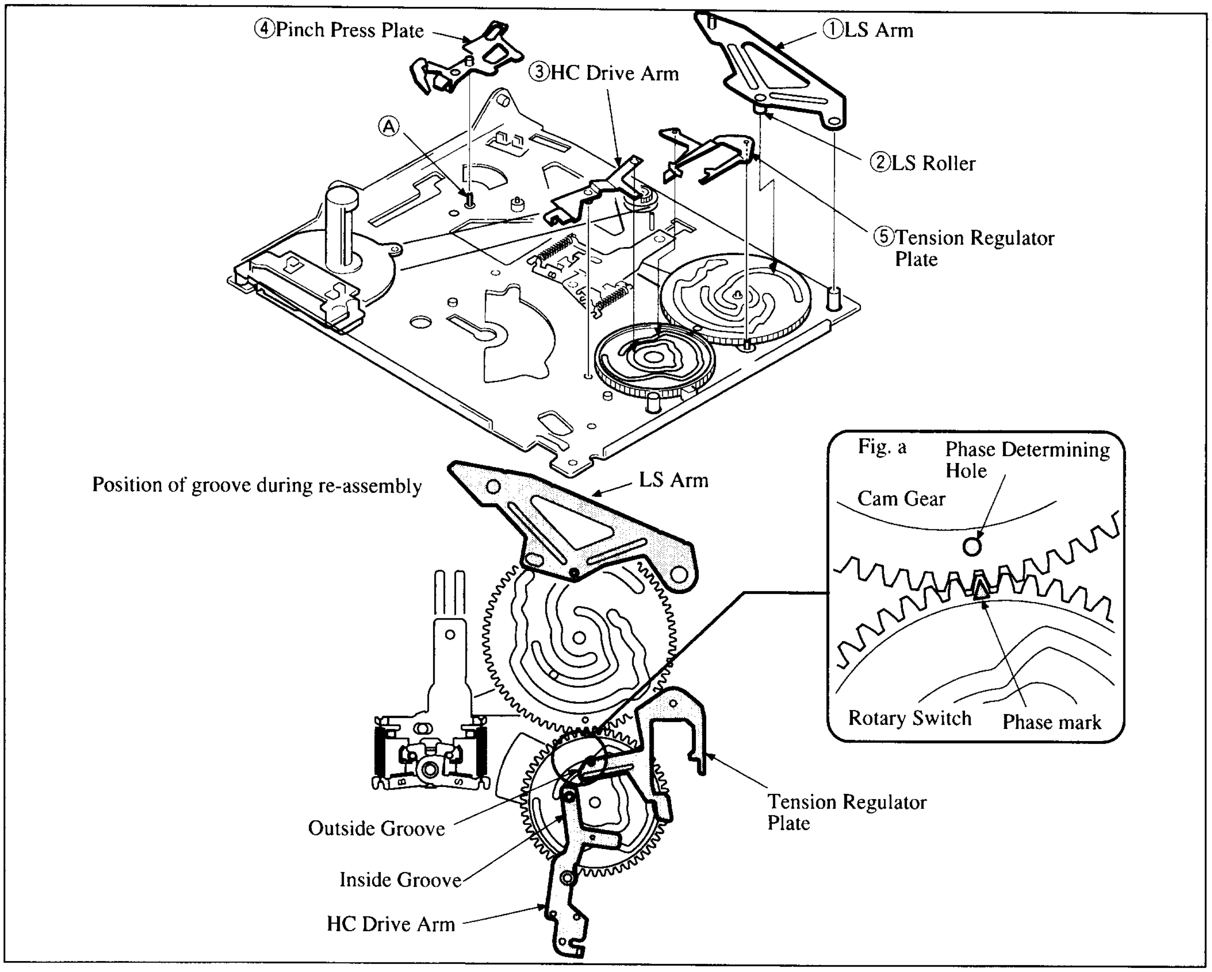

④Pinch Press Plate
③HC Drive Arm
Ⓐ
①LS Arm
②LS Roller
⑤Tension Regulator Plate
Position of groove during re-assembly
LS Arm
Fig. a
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
Tension Regulator Plate
Outside Groove
Inside Groove
HC Drive Arm

Fig. 19

3-14. Cam Gear (Refer to Fig. 20)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm and Tension Regulator Plate referring to section 3-13.
10) Remove the Cam Gear ①.

2. Precautions During Re-Assembly

1) Before attaching the Cam Gear ①, align the phase mark on the rotary switch until it agrees with the phase-determining hole Ⓐ on the mechanism chassis, and align the GL Arm's phase mark Ⓑ until it agrees with the phase-determining hole Ⓐ on the mechanism chassis. Coat the mechanism's chassis Gear Axis Ⓐ with grease SG-055G (Ref. No. J-13).
2) Attach the Cam Gear ① so that its phase hole agrees with the phase mark on the rotary switch. (Refer to Fig. a)
3) After the Cam Gear ① is attached, coat the GL Arm Axis Block of the cam gear with grease SG-055G (Ref. No. J-13).

Reference : The phase marks of the Cam Gear and Rotary Switch can also be checked from the rear side of mechanism chassis. It means that the phase can be confirmed after mechanism deck is fully re-assembled.

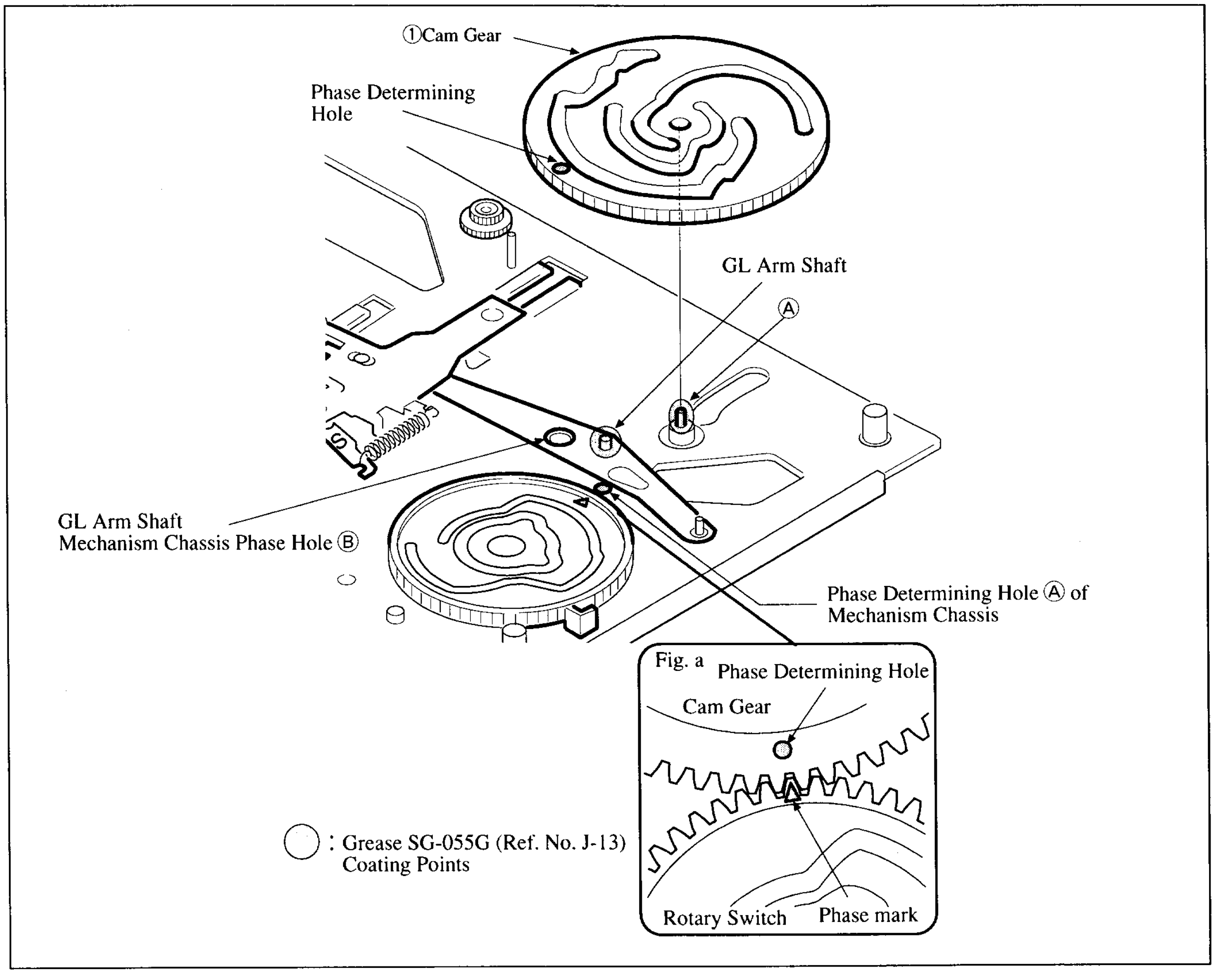

①Cam Gear
Phase Determining Hole
GL Arm Shaft
Ⓐ
GL Arm Shaft
Mechanism Chassis Phase Hole Ⓑ
Phase Determining Hole Ⓐ of Mechanism Chassis
Fig. a
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
○ : Grease SG-055G (Ref. No. J-13) Coating Points

Fig. 20

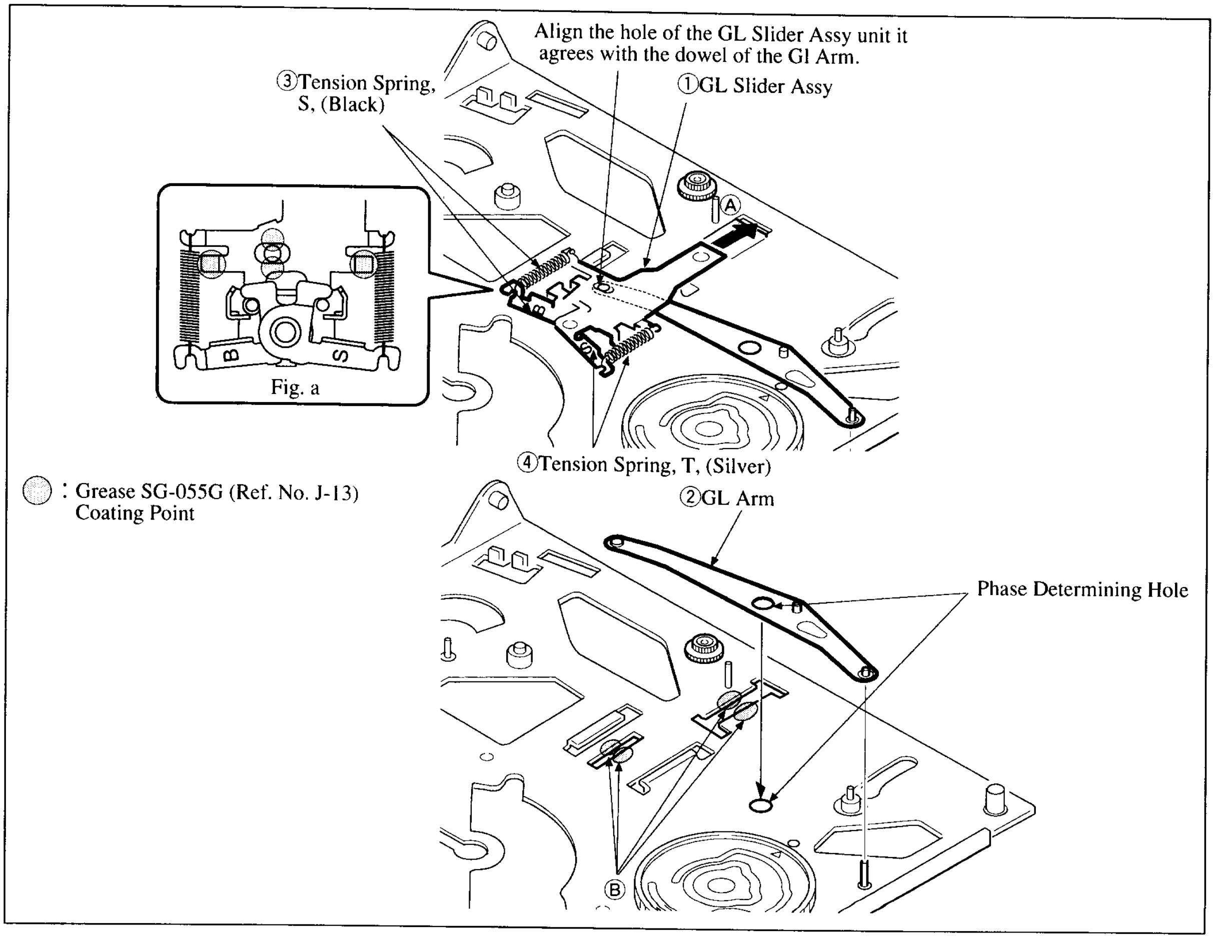
3-15. GL Slider Assy, GL Arm (Refer to Fig. 21)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm and Tension Regulator Plate referring to section 3-13.
10) Remove the Cam Gear referring to section 3-14.
11) Remove the GL Slider Assy ① by sliding it in the direction of the arrow Ⓐ.
12) Remove the GL Arm ②.

2. Precautions During Re-Assembly

1) The Tension Spring T③ is colored black and the Tension Spring S④ is colored silver.
2) Coat the position shown in Fig. a of the GL Slider Assy ① with grease SG-055G (Ref. No. J-13).
3) Coat the four points Ⓑ where GL slider is attached on the mechanism chassis with grease SG-055G (Ref. No. J-13).
4) After attaching the GL Arm ② and the GL Slider Assy, align the GL arm phase hole until it agrees with the phase-determining hole on the mechanism chassis.



Align the hole of the GL Slider Assy unit it agrees with the dowel of the Gl Arm.
③Tension Spring, S, (Black)
①GL Slider Assy
Ⓐ
B
S
Fig. a
④Tension Spring, T, (Silver)
②GL Arm
○ : Grease SG-055G (Ref. No. J-13) Coating Point
Phase Determining Hole
Ⓑ

Fig. 21

3-16. Rotary Switch (Refer to Fig. 22)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm, Tension Regulator Plate, HC Drive Arm and Pinch Press Plate referring to section 3-13.
10) Remove the Cam Gear referring to section 3-14.
11) Remove soldering the portion Ⓐ on the rear of the Rotary Switch. (Pay attention at this moment that the GL Slider and GL Arm do not drop.)
12) While lifting up the portion Ⓑ about 1 mm (pay attention not to break it), hold the portion Ⓒ and turn it in the direction of the arrow Ⓓ to remove the Rotary Switch.

2. Precautions During Re-Assembly

1) Before attaching the Rotary Switch by soldering on the FP-220 board, insert the portion Ⓑ dowel into the hole on the mechanism chassis. Confirm that the three claws are engaged with the mechanism chassis.

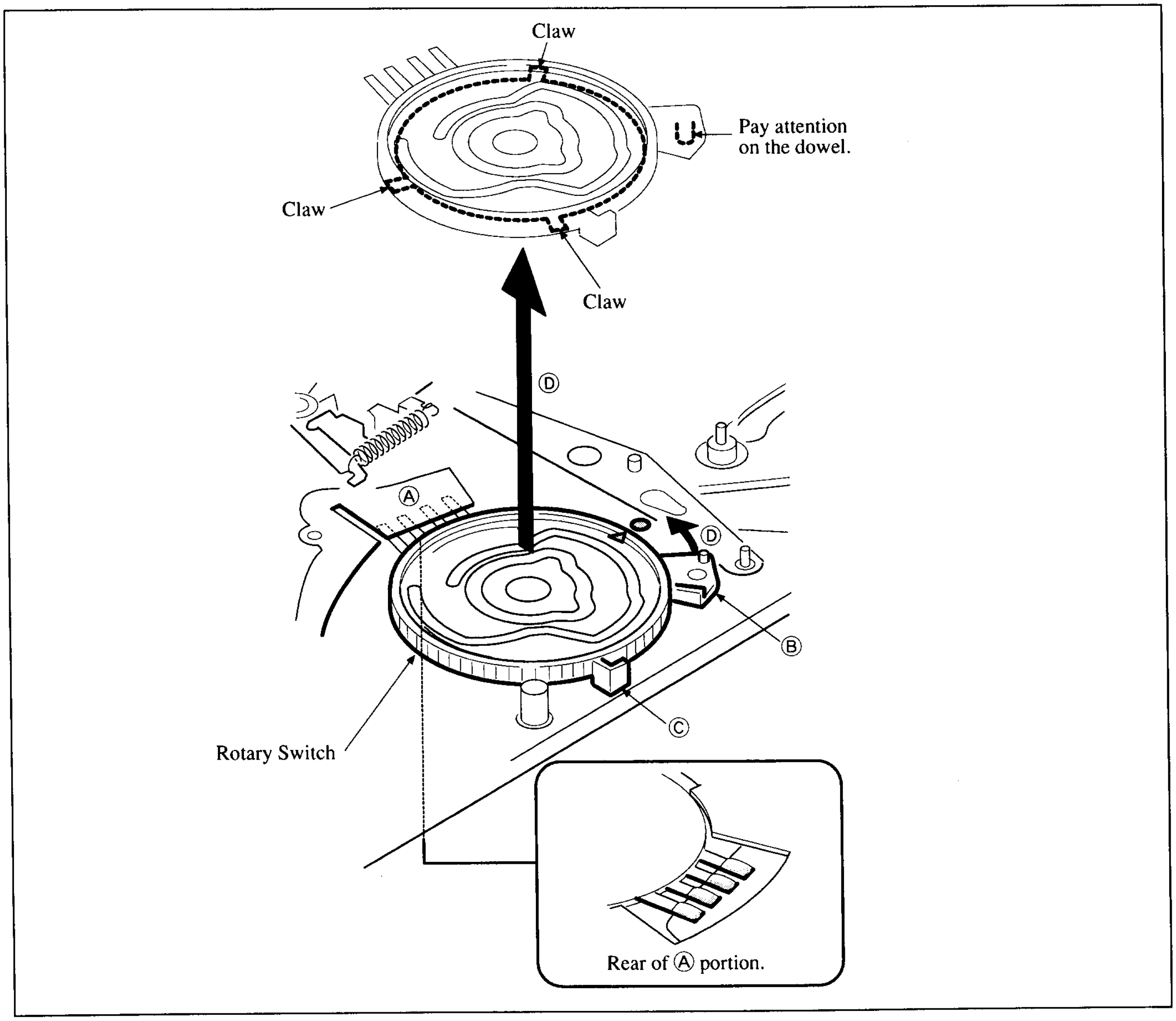


Fig. 22

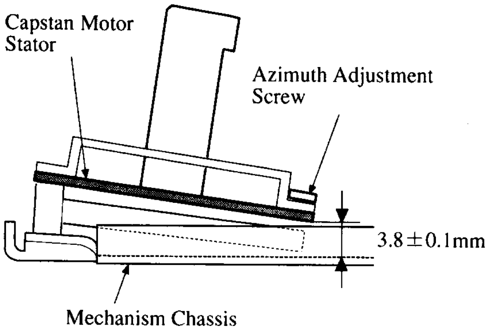
3-17. Capstan Motor (Refer to Fig. 23)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the Pinch Press Plate referring to section 3-13.
10) Remove the screw (M 1.4×6.7) ① and remove the Flexible Board Holder ②.
11) Remove the two screws (M 1.4×6.7) ③ and remove the Capstan Motor ④, Timing Belt ⑤ and Capstan Spacer ⑥.
12) Remove the washer ⑦ and remove the Changer Gear ⑧.

2. Precautions During Re-Assembly

1) Confirm that the timing belt is not twisted.
2) Do not touch the capstan with bare hand.
3) Lubricate the mechanism chassis's Change Gear shaft Ⓐ.
4) After attaching the Capstan Motor, perform the capstan azimuth adjustment.


Capstan Motor Stator
Azimuth Adjustment Screw
3.8±0.1mm
Mechanism Chassis

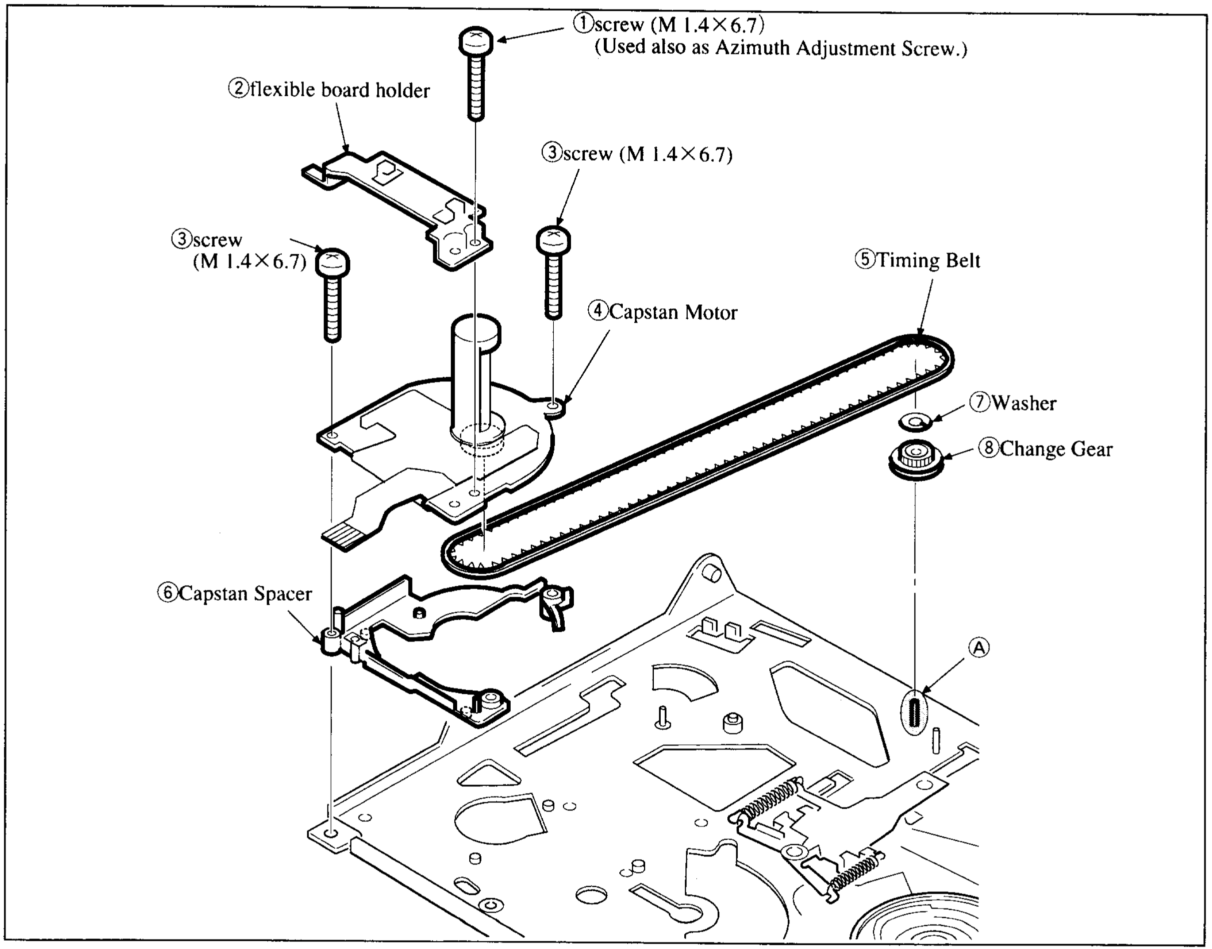

①screw (M 1.4×6.7)
(Used also as Azimuth Adjustment Screw.)
②flexible board holder
③screw (M 1.4×6.7)
③screw
(M 1.4×6.7)
⑤Timing Belt
④Capstan Motor
⑦Washer
⑧Change Gear
⑥Capstan Spacer
Ⓐ

Fig. 23

3-18. Tension Regulator Position Adjustment (Refer to Fig.24)

1. Adjustment Procedure

1) Insert a cassette Tape and run the Tape in PB mode.
2) While tape is running, confirm that the distance between the LS Chassis and TG-1 Guide's top flange is 8.3mm.
3) If not, proceed to step 4).
4) Loosen the screw ① (M 1.4×3).
5) If the TG-1 Guide is located inside the specified position, move position of the Tension Regulator Band Assy using the FWD B.T. Adjustment tool screwdriver (Ref. No. J-9) as shown in the direction of the arrow Ⓐ. If it is located outside, move it in the direction of the arrow Ⓑ.
6) Tighten the screw ① (M 1.4×3).

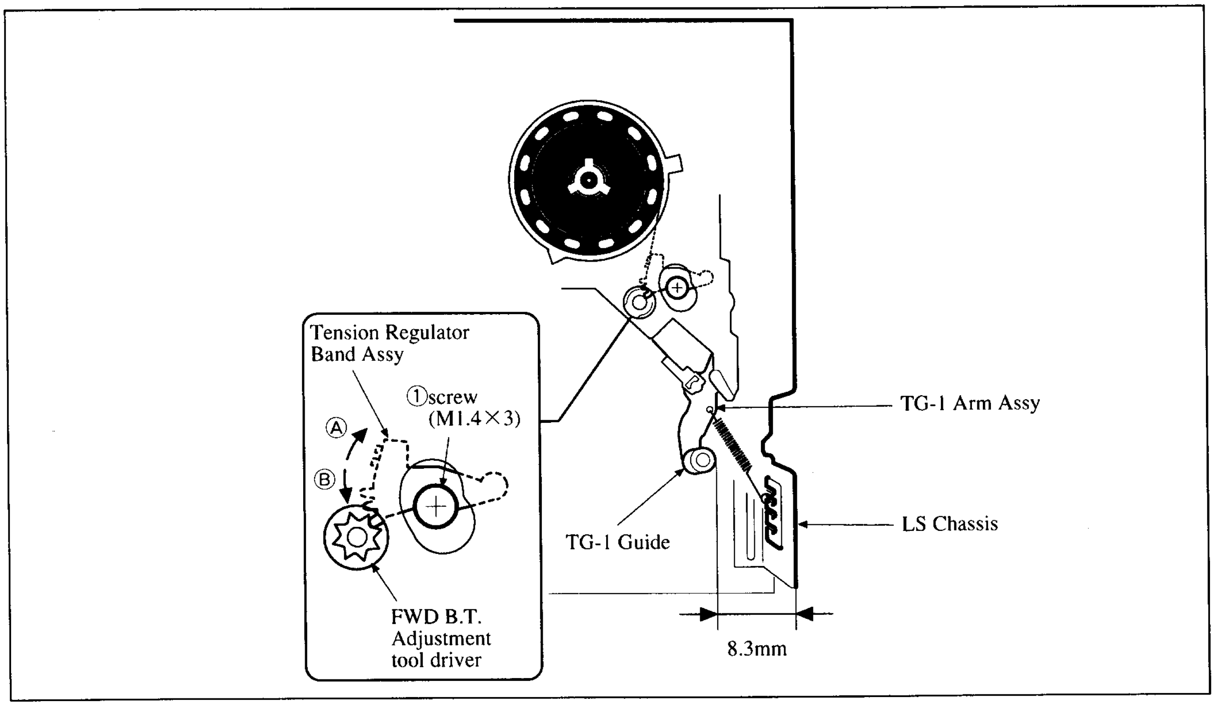

Tension Regulator Band Assy
①screw (M1.4×3)
Ⓐ
Ⓑ
FWD B.T. Adjustment tool driver
TG-1 Arm Assy
LS Chassis
TG-1 Guide
8.3mm

Fig.24

3-19. FWD Tape Hold-Back Tension Adjustment (Refer to Fig. 25)

1. Adjustment Procedure

1) Insert the torque measurement cassette to the machine.
2) Put the machine in the FWD mode. Confirm that the reading on the S side is in the range from 8.0 to 10.5 g•cm. If the reading is outside the specification range, make the following adjustments.
3) If the reading is higher than the specification, change the TG-1 Tension Spring to the side Ⓐ.
4) If the reading is lower than the specification, change the TG-1 Tension Spring to the side Ⓑ.

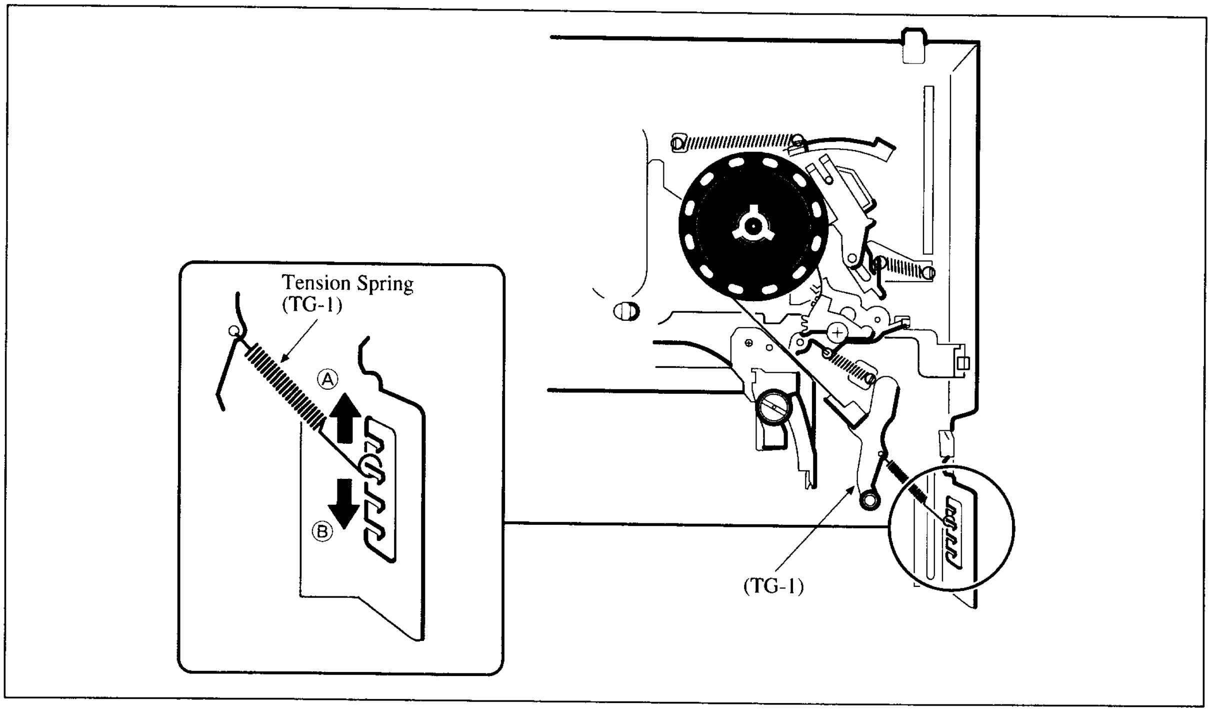


Fig. 25

4. TAPE PATH ADJUSTMENT

Purpose:	Adjusts the head linearity.
Adjustment Error:	Noise appears on top and bottom of display when playing back the tape recorded by other machines.

4-1. Preparations for Adjustments

1) Clean the tape running surface (tape guide, drum, capstan, pinch roller).
2) Connect the adjustment remote commander to the REMOTE terminal (JACK block).
3) Establish the PATH mode using the adjustment remote commander (Track Shift mode)* to cancel auto tracking.
4) Connect an oscilloscope.
   CH1: Test connector PB RF terminal
   External trigger: Test connector PB SWP terminal
5) Playback the tracking alignment tape WR5-1NP (NTSC) or WR5-1CP (PAL) (Ref. No. J-6).
6) Check to see that RF waveform is flat at input and exit sides on oscilloscope.
   If it not flat, perform the following section 4-2 until it is flat.
7) After completing the adjustment, release the PATH mode (Track Shift mode).*.

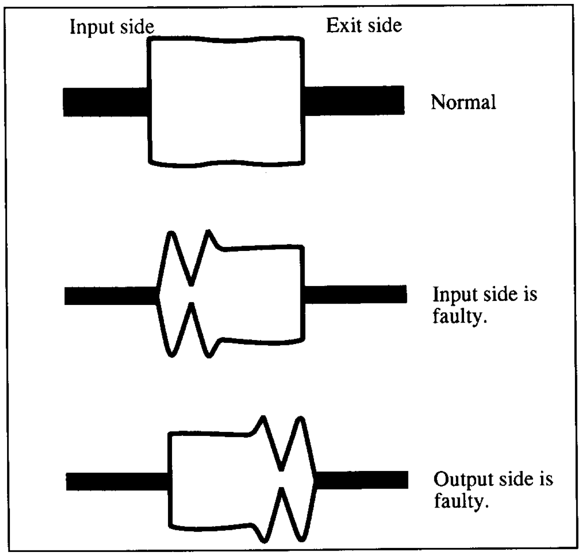


Fig. 26

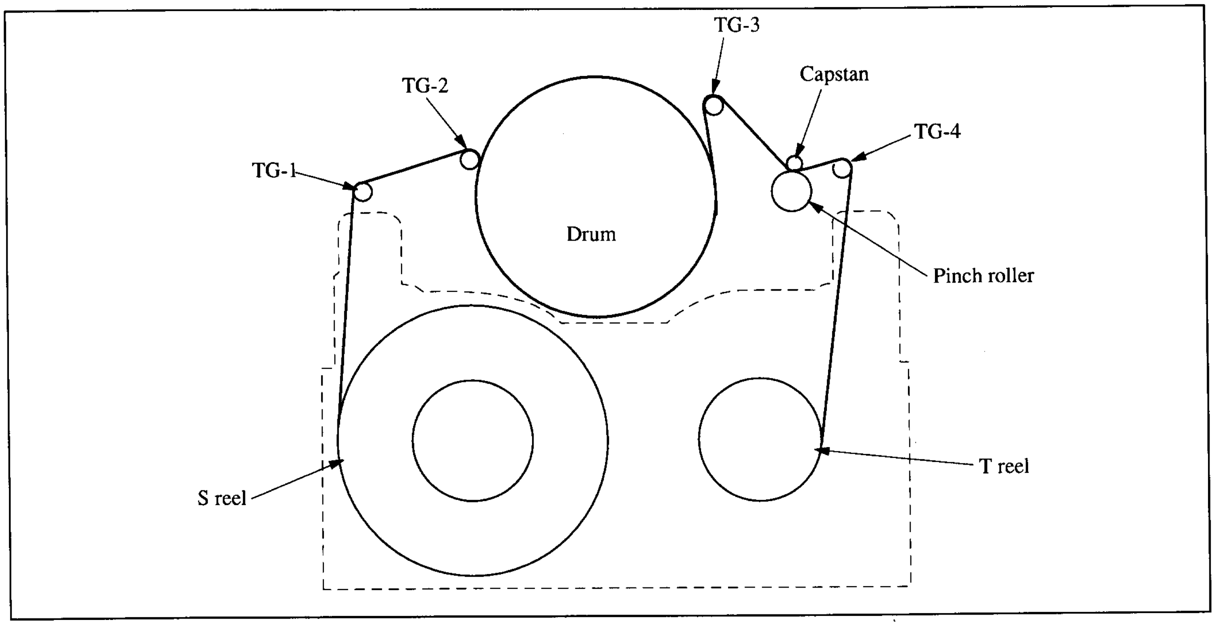


Fig. 27

* How to enter and exit the Track Shift mode. (In the case of CCD-TR420E/TR440E)

Entering the Track Shift mode

1. Select page : 6, address : 00 set data : 01 and press the PAUSE button.
2. Select page : 7, address : 01 set data : 03 and press the PAUSE button.

Exitting the Track Shift mode

1. Select page : 7, address : 01 set data : 00 and press the PAUSE button.
2. Select page : 6, address : 00 set data : 00 and press the PAUSE button.

4-2. Tracking Adjustment (Refer to Fig. 28.)

1) Playback the tracking alignment tape WR5-1NP (NTSC) or WR5-1CP (PAL) (Ref. No. J-6).
2) Adjust the tape guide No. 2 until the input side waveform becomes flat.
3) Adjust the tape guide No. 3 until the input side waveform becomes flat.

☆ Zenith adjustment screws for the TG-2 and TG-3 do not need to be adjusted.

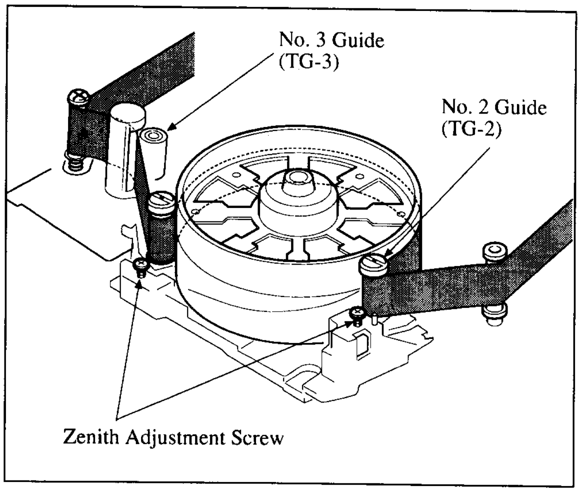


Fig. 28

4-3. No. 4 Guide (TG-4) Adjustment (Refer to Fig. 29.)

1) Playback a tape in REV mode.
2) Confirm that tape slack does not occur in between the guide No. 3 (TG-3) ① and Capstan ②. If tape slack is found, turn the height adjustment screw ④ of the Guide No. 4 (TG-4) ③ until tape slack is removed.
3) Playback a tape in FWD mode. Confirm that tape slack does not occur in between the guide No. 4 (TG-4) ③ and capstan ②. (Specification = 0.5 mm or less) If tape slack of more than 0.5 mm is found, turn the TG-4 nut ④ until the slack is 0.5 mm or less. Playback tape in REV mode and confirm that tape slack in between the guide No. 3 (TG-3) ① and capstan ② is 0.3 mm or less, the adjustment is complete.

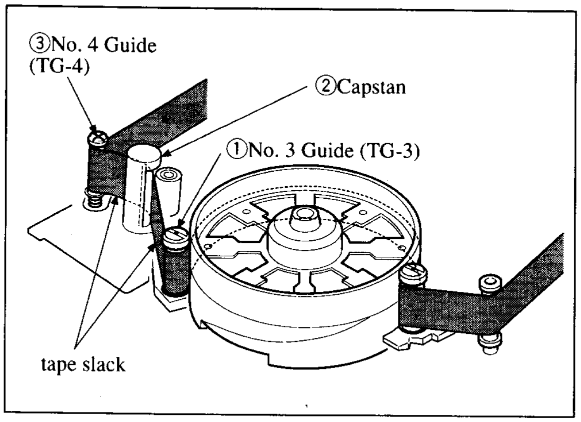


Fig. 29

4-4. CUE, REV Waveforms Check (Refer to Fig. 30.)

1) Playback the tracking alignment tape in REV mode.
   Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
   The pitches are not equally spaced, perform sections "4-2. Tracking Adjustment" and section "4-3. No. 4 Guide Adjustment".
2) Playback the tracking alignment tape in CUE mode.
   Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
   The pitches are not equally spaced, perform section "4-2. Tracking Adjustment".

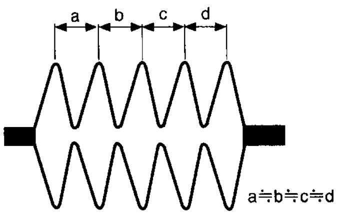


Fig. 30

4-5. Checks After Adjustments

4-5-1. Tracking Check

1) Confirm that amplitude of the RF waveform decreases to about 3/4 when the machine enters the PATH mode. (Refer to Fig. 31)
2) Confirm that the minimum amplitude (EMIN) of the RF waveform is 65 % or more of the maximum amplitude (EMAX). (Refer to Fig. 32)
3) Confirm that the RF waveform does not have too much fluctuation. (Refer to Fig. 33)

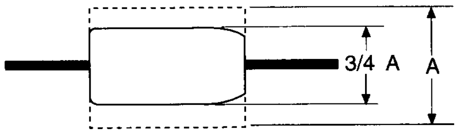


Fig. 31

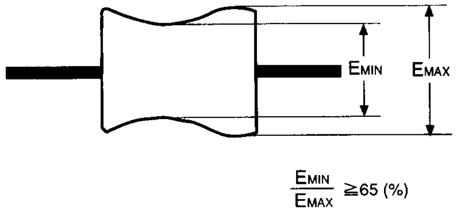


Fig. 32

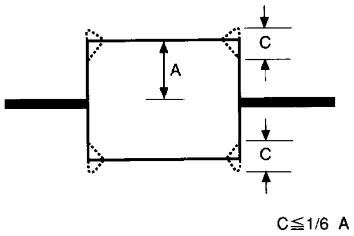


Fig. 33

4-5-2. Waveform Build-up Check (Refer to Fig. 34.)

1) Playback the tracking alignment tape.
2) Turn OFF the Track Shift mode.
3) Eject the tape once, insert and load the tape.
4) Start playing back the tape and confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack does not occur near pinch roller.
5) Playback the tape in CUE/REV and FF/REW modes respectively. Confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack does not occur near pinch roller.
6) Repeat the check items 3) to 5) again.

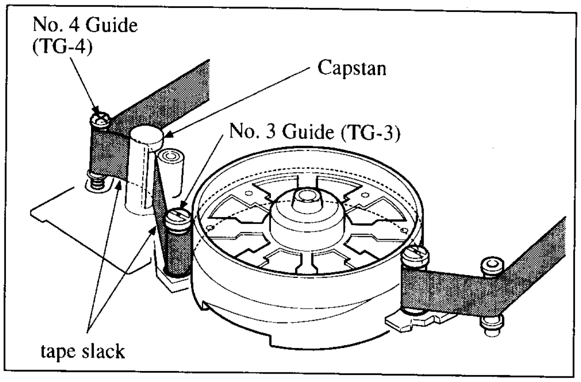


Fig. 34

4-5-3. Tape Pass Check (Refer to Fig. 35.)

1) Insert a thin video tape such as P6-120MP (NTSC) or P5-120MP (PAL). Playback the thin tape. Confirm that there is no clearance or curl of 0.3 mm or more at the following points: Upper flange of guide No. 2, upper flange of guide No. 3, upper and lower flanges of guide No. 4.
2) Confirm that there is no clearance or curl of 0.3 mm or more at each tape guide when the FF button is pressed from the playback mode to enter the CUE mode, and when the REW button is pressed from the playback mode to enter the REV mode.

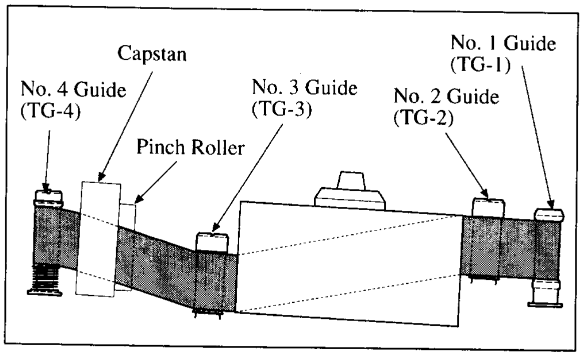
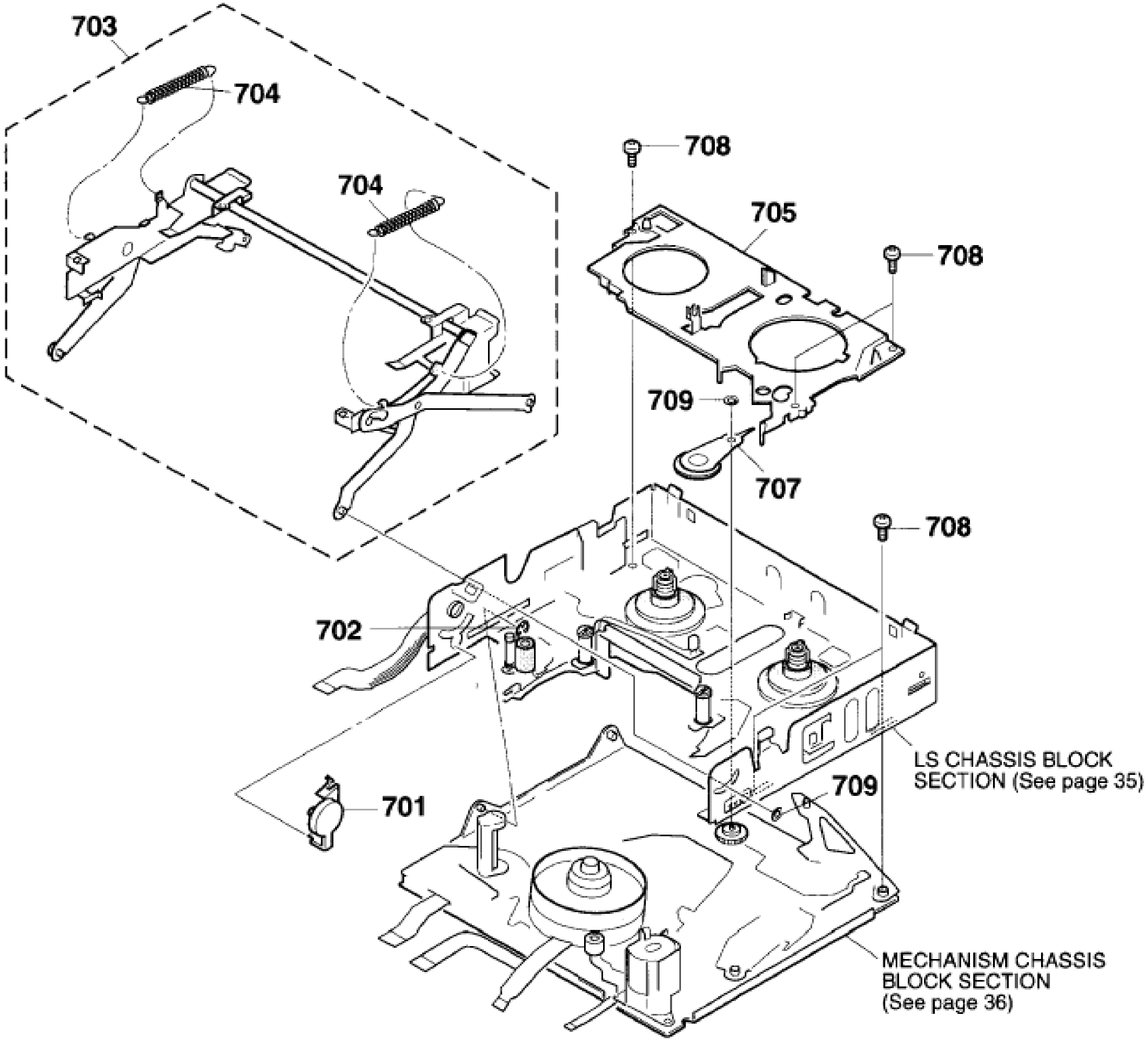


Fig. 35

5-1. Cassette Compartment Block Section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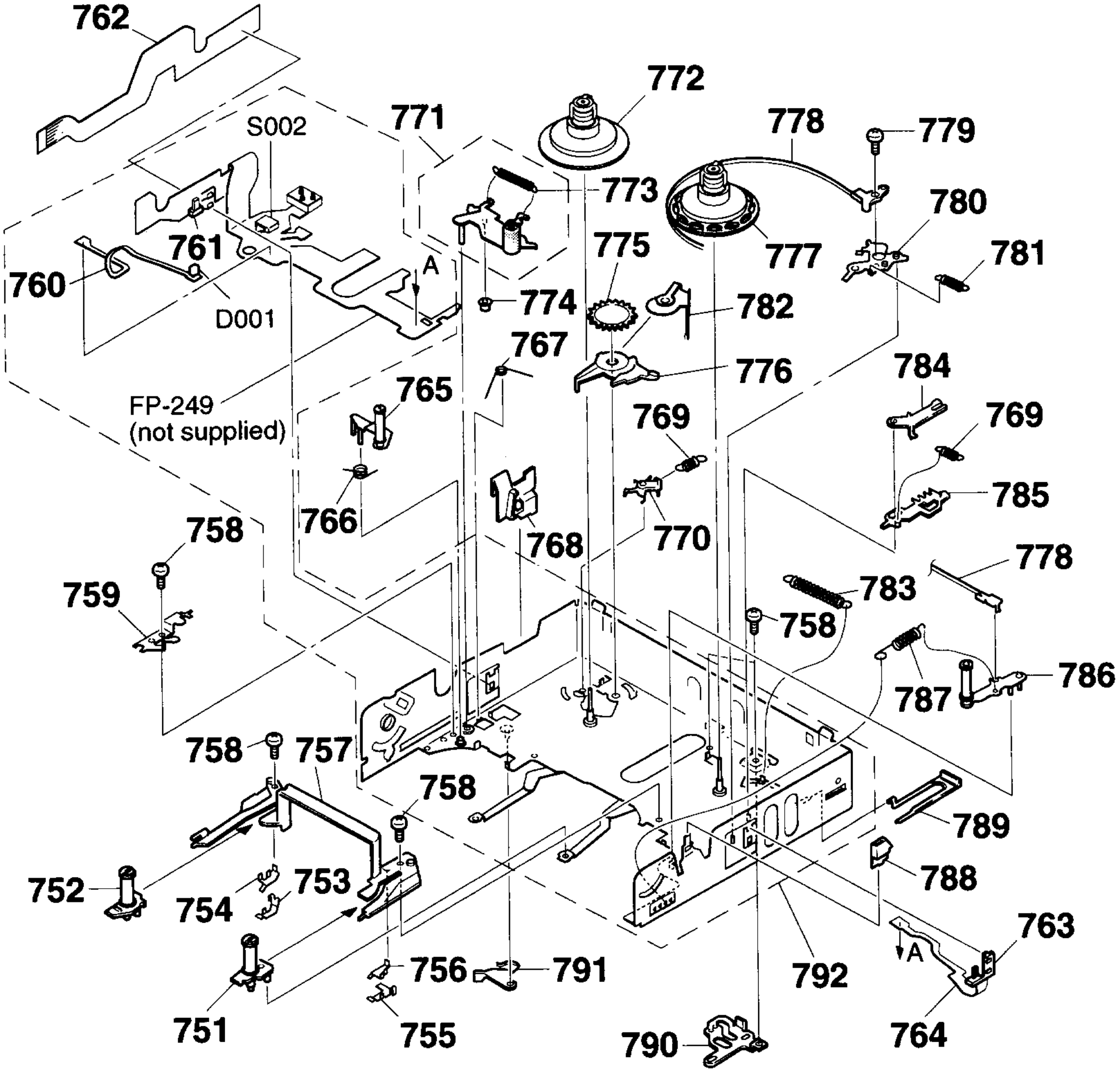
LS CHASSIS BLOCK SECTION (See page 35)
MECHANISM CHASSIS BLOCK SECTION (See page 36)

5-2. LS Chassis Block Section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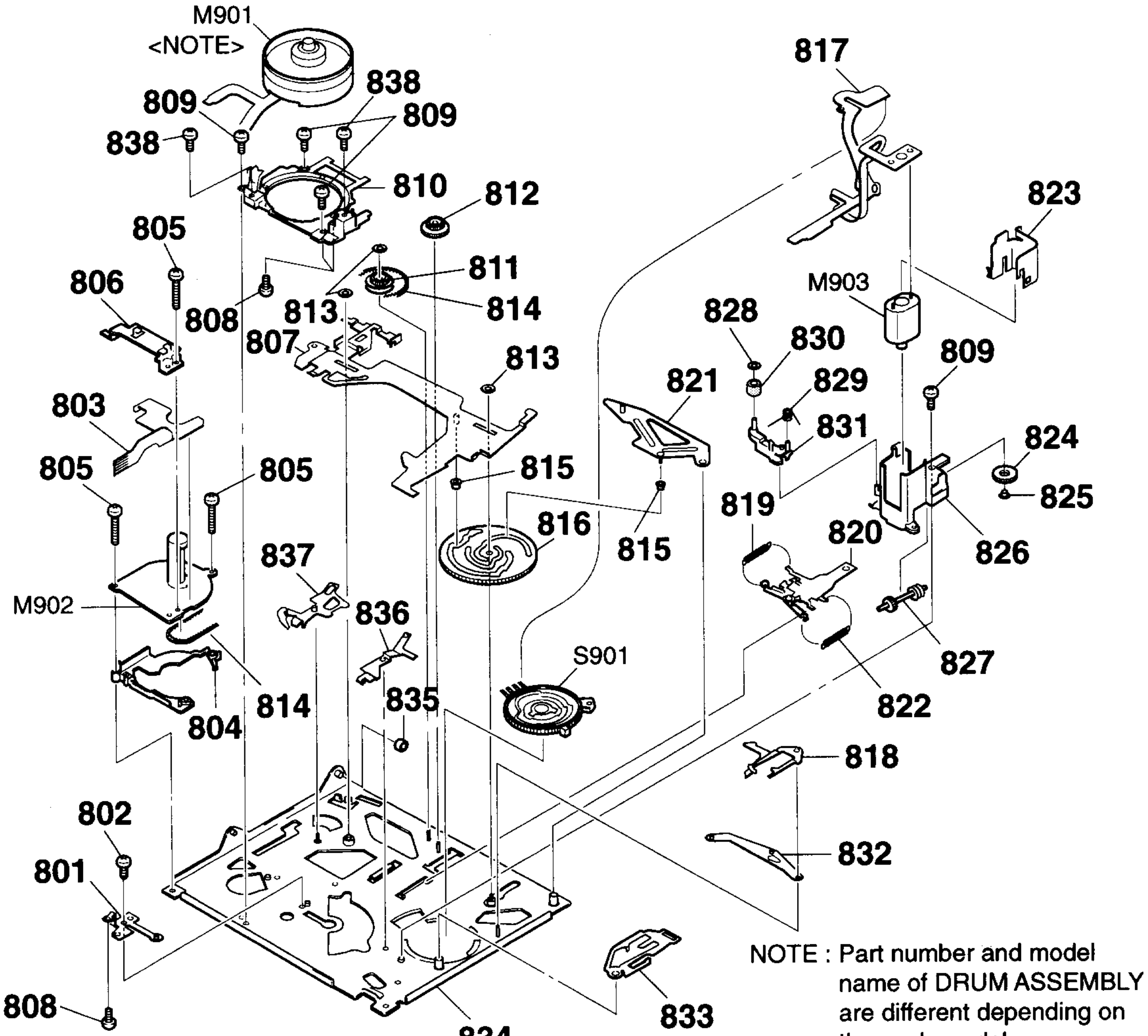
5-3. Mechanism Chassis Block Section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NOTE : Part number and model name of DRUM ASSEMBLY are different depending on the each model.